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COMMERCIAL FISHERIES REVIEW

A review of developments and news of the fishery industries
prepared in the BRANCH OF COMMERCIAL FISHERIES



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SEA-FOOD PRODUCTS IN ARMED FORCES RATIONS

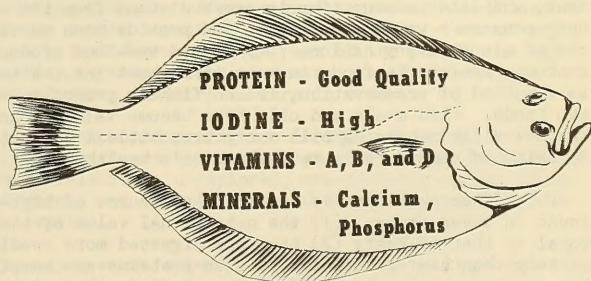
By Stanley R. Peterson*

ABSTRACT

FOODS HIGH IN PROTEIN ARE NOT SO PLENTIFUL AS TO WARRANT OVERLOOKING ANY SOURCE THAT CAN BE ECONOMICALLY EXPLOITED. MARINE PRODUCTS HAVE NOT, TO BE SURE, BEEN OVERLOOKED, BUT IN MILITARY FEEDING AT LEAST THEY HAVE NOT BEEN AMONG THE PROTEIN FOODS THAT COME TO MIND IMMEDIATELY WHEN DESIGNING OPERATIONAL RATIONS. BECAUSE THESE PRODUCTS OF THE SEA HAVE MANY VIRTUES IMPORTANT IN NUTRITION--A GOOD QUALITY OF PROTEIN IS ONLY ONE OF THEM--ATTENTION IS CALLED IN THIS ARTICLE TO THE MERITS OF SEA FOODS IN THEMSELVES AND TO THE RICH RESOURCES AVAILABLE WHEN IT COMES TO PROCURING FOODS IN VOLUME LOTS FOR MILITARY FEEDING. THIS ARTICLE REVIEWS THE CONTRIBUTION OF FISH TO THE DIET, THE RESOURCES OF THE NATION FOR PRODUCING FISHERY PRODUCTS, AND SOME OF THE OBJECTIVES OF ARMED FORCES DEVELOPMENT WORK. CURRENTLY, THE EMPHASIS IS ON INCREASING THE VARIETY OF FISHERY PRODUCTS AVAILABLE AND ACCEPTABLE TO THE ARMED FORCES.

CONSUMPTION IN ARMED FORCES

Consumption of sea foods in Armed Forces rations is small in comparison with the amount of meat and poultry products being consumed. At present, such products are in use by the Military primarily to provide variety in the "A" and "B" rations for general mess feeding, and to provide fish on Fridays in accordance with traditional Army menu practices. This apparent lack of Armed Forces interest is due to a number of factors. Perhaps the most important single reason is the general American consumer preference for meat and poultry over fish and the availability of these more preferred items.



In 1951, the average United States per-capita consumption of meat (excluding fish) was 137.7 pounds. This figure included beef, veal, lamb, mutton, and pork (no lard). The average per-capita consumption of chicken was 28.8 pounds and of turkey 5.2 pounds, making a total of 34.0 pounds for poultry products.^{1/} The average per-capita consumption of edible fishery products--11.5 pounds--is obviously well below the averages for other types of meats, and far below the averages for

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^{1/} FIGURES FOR MEAT AND POULTRY RELEASED BY THE U. S. DEPARTMENT OF AGRICULTURE.

certain sea food-consuming European and Asiatic nations. However, during any emergency, the abundant availability of meat and poultry must be discounted and sea-food products may have to be used in much larger amounts to help conserve the diminishing supplies of more generally accepted meat items. Furthermore, many sea-food products can also be served at a lower cost than most meat and poultry products.

Although sea-food products never have enjoyed the place in the American diet that they occupy in the diets of many European and Asiatic peoples, the popularity of fish as an entree is increasing in this country and this dietary tendency is naturally being reflected among the members of the Armed Forces. Most persons have many firmly developed food likes and dislikes before entering the Armed Services. Army consumption of sea foods during World War II showed a decided sectional influence. Depending upon where they had lived prior to the war, the men tended to eat a greater or lesser amount of sea-food products. Those from the West, certain parts of the Middle West, and from some sections of the South did not consume much fish whereas troops from coastal areas consumed both a wide variety and a large quantity. It must also be recognized that appetite and digestion are affected by a great variety of psychological factors associated with Armed Services operations, i.e., anxiety, boredom, homesickness, etc. Consequently, in order to promote a greater consumption of sea-food products by members of the Armed Forces, these items will have to be made highly acceptable and must also have the necessary military characteristics.^{2/} The future possibilities of more sea foods in the rations will, undoubtedly, depend to a large extent on the provision of products with a greater degree of acceptability.

SEA FOODS RICH IN FOOD VALUE

The food elements found in sea foods are protein, fat, mineral matter, and vitamins. The water content will vary from 70 to 80 percent, depending on the species and the individual fish.

Sea foods have always been a substantial source of the world's protein supply, largely because they are practical for preserving processes, storage, shipment, and later consumption in areas distant from the sea. Canned sea-food products possess a world-wide market and provide menu variety at low cost to consumers of almost every nation. Dry-salted sea-food products, because of their salt content, are staple foods in many warm countries. When freezing began to develop as a method of preservation, frozen fishery products were among the first new frozen foods. Fish meals and oils have become valuable in animal feeding programs, and the vitamin-bearing oils and pharmaceutical products derived from fish have contributed considerably to the nation's health.

Evidence that fish is an excellent source of high-quality protein is to be found in these facts: (1) the nutritional value of its protein has been found equal to that of beef; (2) they are digested more readily although no more completely than beef proteins; (3) fish proteins are complete because they contain the ten essential amino acids in proportions that can be economically utilized by the body; (4) the amino acids making up the proteins of fish muscle are the same as those found in chicken muscle and exist in approximately the same proportions (constituting about 18 percent of the meat). Fish, however, has more gelatin-forming protein and less extractives and consequently is perhaps less palatable for a steady diet. The fat content of fish varies from 1 to 20 percent, depending on the individual fish, the species, sex, degree of maturity, the season, and the abundance of food.

Mineral matter constitutes approximately one percent of the edible portion of fish, and these minerals are comparable to those found in other meats. Sea

^{2/} MILITARY CHARACTERISTICS MAY BE DEFINED AS THOSE REQUIREMENTS FOR SATISFACTORY PERFORMANCE UNDER CRITICAL AND UNUSUAL MILITARY OPERATING CONDITIONS.

foods, however, contain considerably more iodine than any other meat. (This does not hold true for fresh-water fish.) Analyses have shown that oysters, clams, and lobsters have 200 times more iodine; and shrimp, crabs, and ocean fish show 50 to 100 times more iodine than beef or milk. Because of the known relationship between iodine and goiter prevention, the so-called "goiter belts" are becoming increasingly aware of the need for more sea foods in the diet. In countries such as Japan where sea-food constitutes the main source of protein, goiter is unknown. Oysters, in addition, are rich in copper and iron--rating second only to liver in iron content. However, the common belief that fish is an especially good "brain food" has been discredited.

No standard value can be assigned fish as to their vitamin content as it is a variable factor. Fatty fish are a good source of the fat-soluble vitamins A and D, and with variations from species to species in vitamin B. However, the meat of fish generally is low in vitamin C. In this respect fish is comparable to other meats.

The average caloric value of one ounce of fish is 30 as compared with a value of 89 for an ounce of beef. The low fuel value of fish may be attributed to the high percentage of water, the low percentage of fat, and the high percentage of waste. Fish cannot be ripened like meat because of the unpalatable flavors resulting from the enzymic action. Furthermore, a great deal more waste is obtained from fish than beef due to the quantity of offal in the head, scales, fins, and entrails. Yet, in spite of the relatively low caloric value and its comparatively high percentage of offal, fish is an economical food. For example, production of other types of meat requires crop cultivation along with the expenditure of considerable labor. Today our land areas are progressing toward their peak of production of beef and other forms of animal protein. Fish, however, live on the vegetation found in all waters and consume no cultivated crops. They are found in almost inexhaustible numbers and require little or no planting; all that is necessary is some means of harvesting.

PRESENT SCOPE OF THE SEA-FOOD INDUSTRY

Granted then that the fishing industry offers a good source of nutritious and high-protein foods which may assume especial importance in the event of any national emergency, why the past indifference on the part of the public and the Military? Part of the answer may be found in the industry itself. Perhaps a brief look at the scope of the fishing industry is here in order.

It has been estimated that the world production in 1948 of 39 billion pounds would be worth about three billion dollars at the fishermen's level. The sea-food resources of the oceans, though relatively unexplored, are probably on the threshold of their greatest development, and therefore are of economic importance far beyond the casual current conception.

The following statistics may present a better picture of the size of the present fishing industry. The estimated catch of fishery products in all sections of the United States and Alaska in 1949 totaled 4.8 billion pounds, valued at \$339,000,000 to the fishermen. The catch was landed by 160,000 fishermen aided by 4,000 transporters; and 110,000 workers in 4,000 shore plants processed, packed, and distributed fishery products. The industry also was responsible for the indirect employment of an estimated 300,000 persons in allied industries, such as gear manufacture, shipbuilding, manufacture of processing equipment, and service industries supplying food, fuel, etc. About 85,000 craft were engaged in the fisheries, of which 8,000 were documented fishing vessels of five net tons or over. The products of the industry were worth an estimated \$996,613,000 when purchased by

the consumer in 1948, and the estimated replacement value of fishing craft, gear, processing plants, wholesale establishments, etc., was \$951,000,000.

The fresh- and salt-water fish and shellfish taken for food annually in the United States and Alaska are sold under 200 or more different names; however, consumer purchase is generally limited to only a few species, although all of the species are edible.

Approximately two-thirds of the world catch of fishery products is marketed as fresh, frozen, canned, or cured, and the remaining one-third is reduced to fish meal and oil. Of the amount that is caught for human consumption, about 40 percent is edible and the remainder (60 percent) is waste products. From an annual catch of 39 billion pounds it has been roughly estimated that the world's production of processed fishery products has been about 2 billion pounds of canned fish and about 3 billion pounds of cured fish (dried, salted, and smoked). A significant part of the catch along with the processed waste was used to produce fish meal and fish oil. It was estimated that about 13 billion pounds of the catch was used for reduction purposes. The remainder of the catch--approximately 16 billion pounds--was marketed as fresh or frozen products.

SPECIAL ARMED-FORCES REQUIREMENTS

In the procurement, storage, and shipping of foodstuffs, the Armed Forces have problems that are associated with factors arising from the providing of seasonal food the year-round to troops located both nearby and in distant parts of the world. This is certainly true of sea foods; they are generally caught during certain periods of the year and then sold fresh, canned, frozen, or preserved by other means. The canned and frozen products may be in storage for some time even after procurement by the Armed Forces before reaching the ultimate consumer. Generally speaking, this consumer is a new taster of any new sea-food item and the product will have to be good for him to eat it. If he likes it, then more of the same will be provided and eaten again, and he, the Armed Forces, and the fishing industry will have benefited. It is also safe to assume that if a liking is established for a food while in the Service, that liking will be maintained for the same food when out of the Service. It would seem important then that any sea-food ration provided to a soldier, sailor, airman, or marine should be what he desires and likes.

Perhaps one factor that needs brief mention here is the fact that despite the attractiveness and eye-appealing nature of most modern sea-food products, the picture is not entirely satisfactory. While great strides have been made generally by the industry, there are still some plants throughout the country that have not kept pace with the more modern handling of sea-food products. This tends to deter Armed Forces interest in such items. The Services are as always desirous of including more highly-acceptable, nutritious, and stable sea-food products in the rations in order to provide a greater variety in the menu of economical products readily available from a tremendous potential supply of protein food. Even at this date, however, the majority of sea-food products do not have the acceptability that they should have to meet Armed Forces requirements. This condition, then, should be remedied if the fishing industry is really interested in selling a larger amount of sea-food products to the Armed Forces.

The desired requirements and military characteristics of sea-food items in the three major product categories can now be presented in greater detail.

CANNED SEA FOODS

Canned sea-food products are needed that will have a storage life of at least one year at 100° F. These items, required for the operational rations, must be palatable when cold. Such products are further limited, at present, from the standpoint of variety. Development of at least a dozen acceptable fish combination items for operational rations is the present need.

A technological examination of an optimum canned fish product might disclose the following points:

1. Can size--dictated by the ration in which the product is to be used. For individual feeding, such as the C-ration, Assault Ration, In-Flight Ration, use is made of 6- to 12-ounce cans of standard size (300 x 200 or 300 x 308). For the B-ration, cans that are as large as possible and yet retain the quality of the contents should be used (30-ounce 401 x 411 or 404 x 404 to No. 10 cans, 603 x 700).

2. General appearance--pleasing and appetizing in the can without heating or any other kind of preparation. A lesser degree is acceptable for the large-size can where kitchen facilities (B-ration) are available.

3. Color--should be characteristic of the product, i.e., canned tuna--dark--to white-colored meat while salmon is pink to red colored; should denote high degree of preservation; should be uniform.

4. Odor--not to exceed a mild fish odor. Other ingredients, if used, should produce a pleasing aroma.

5. Flavor--within the limits of a mild fish flavor should be characteristic of the product. Highly spiced, salty, bitter, sour, or excessively sweet flavors are not desirable.

6. Texture--firm. Excessively dry or watery texture is undesirable. All ingredients should be clearly outlined in the can and a mushy appearance avoided. The minimum standard is-- "sufficiently firm to permit retention of characteristic outline of the product during additional preparation for those items used where kitchen facilities are available."

The above requirements may be considered the military characteristics necessary to assure satisfactory performance under critical and unusual military conditions of use, i.e., use without additional preparation in aircraft or a foxhole; with limited facilities in a submarine or in rear fighting areas.

Thus far, a number of canned sea-food items--both straight product-type and "combination" items have been examined, including: fish cakes, fish cakes and beans with tomato sauce, fishburger (both unfried and prefried), shrimp cakes, herring, mackerel, spiny lobster, turtle soup, lobster bisque, oyster soup, codfish patties, tuna loaf, turtle chili, salt codfish, fish vienna, salmon, tuna, sardines, salmon patties, chopped clams, and smoked fish patties in tomato sauce.

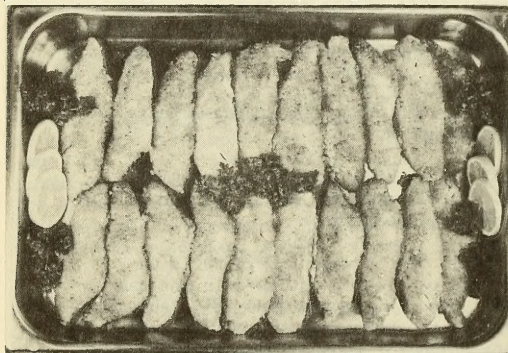
The experimental products that have enjoyed greatest acceptance in limited tests to date are: fish cakes, fish cakes and beans with tomato sauce, codfish patties, salmon, tuna, and sardines.

At the present time, canned salmon and tuna are the principal canned-fish products used by the Military. Other canned-fish items have not been used in the operational rations due to the lack of acceptability. Acceptability evaluations and freezing tests have been made on Puget Sound sockeye salmon packed in 4-pound cans. This product has received a very good rating. Various types and grades of canned tuna and California and Maine sardines have been examined for possible use in the operational rations, with some of these products also receiving good acceptance ratings.

Canned combination items utilizing sea foods appear to present the most feasible means of including sea-food products in the operational rations. Fish products marginally acceptable to the Armed Forces as straight fish items may be entirely acceptable if combined with other food items to provide a nutritious and satisfying product. Two such combination fish products have been prepared and tested for possible inclusion in the operational rations. One consists of tuna and noodles with vegetables and the other of tuna and noodles with cheese. A Military specification for these items is being coordinated with industry and other governmental agencies.

FROZEN SEA FOODS

Acceptance of perishable sea-food products by Armed Forces consumers depends largely on the variables connected with processing, preservation, transportation, preparation, plus of course, original condition. The principal difficulties at



OVEN-BAKED BREADED FISH FILLETS. FROZEN FILLETS ARE ONE OF THE MOST POPULAR FISHERY PRODUCTS PURCHASED BY THE QUARTERMASTER CORPS FOR THE ARMED FORCES.

present are (1) to develop means of measuring the degree of quality in sea foods prior to freezing and storing, (2) to obtain more complete knowledge of the storage life of various sea-food products tested under different conditions of storage, and (3) to determine the acceptability of the different species. Frozen sea-food products are now procured by the Quartermaster Market Center System for nationwide and overseas distribution to all branches of the Armed Forces. The items of greatest procurement are: fillets of cod, flounder, haddock, ocean perch, salmon, and sole; halibut and salmon steaks; oysters; and shrimp. Some frozen fish do not have a

sufficiently good over-all consumer acceptance in the Armed Forces and this generally results in considerable waste when served. Improvement of standards for frozen fish are required in order to increase Armed Forces acceptance. Such an effort is under way--an investigation dealing with improved standards for frozen fish has recently been initiated. Selected types of fresh-frozen fish fillets have been prepared and sampled to determine if the average consumer can significantly determine the relative eating quality of several species of fish generally considered to be of excellent, medium, and poor acceptance. It is anticipated that investigations will soon be conducted to better determine the characteristics of various species of fish under different conditions of storage. This is required because some species may be acceptable after relatively long periods of storage whereas others may have a very short storage life, and procurement should be governed accordingly.

Breaded shrimp is a recent item of procurement by some branches of the Armed Forces. Investigational work is being initiated toward development of an appropriate Military specification. In general, this investigational work will be concerned with the formulas for preparing breaded shrimp, processing methods, freezing, and storing the product.

DEHYDRATED SEA-FOOD ITEMS

It is desirable that new dehydrated sea-food items be developed since they provide a concentrated body-building food of high caloric density with a minimum of weight and bulk. Dehydrated shrimp and dehydrated fish fillets have been tested. The short shelf life and low-acceptance ratings of dehydrated sea foods discourages any attempt to include them in the rations at this time. Studies should continue on fish, shrimp, and other sea-food products in an effort to develop satisfactory items with considerable acceptability after prolonged storage at relatively high temperatures.

NEED FOR ARMED FORCES-INDUSTRY COOPERATION

There are four significant reasons why the Armed Forces are desirous of including sea-food products in the operational rations, namely: (1) the excellent nutritional qualities of this protein-rich food; (2) the vastness of the sources of supply; (3) the desirable element of variety that such products bring to the military menu; and (4) the advisability of expanding the basis of Armed Forces procurement by bringing into the picture a sizable industry that heretofore has been relatively untapped. This last is a particularly valuable consideration in the long-range planning for possible conditions of national emergency.

In its continuing research and development program, the Food and Container Institute prepares and tests various types of sea-food products for possible inclusion in the rations. The industry, on the other hand, has the essential know-how for producing sea foods, and it is because of their technological advances and the lessons learned from repeated processing of the items that the results of research can be realized in practical, high-quality products.

The function of the Quartermaster Food and Container Institute is to serve as both a co-developer and a liaison agency with the fishing industry, and it is hoped that this article will help to bring about a truly successful working relationship. The reward of this relationship, it might be emphasized in conclusion, is that millions of young Americans of military age will become habituated to sea-food products and thus a firm basis will have been laid for a greatly expanded future civilian market.



A REPORT ON THE CUBAN TUNA FISHERY

By John E. Rawlings*

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SUMMARY

The Cuban tuna fishery has been developing since 1940 as an off-season activity for canneries, vessels, and fishermen. The canneries pack not only other sea food but vegetable products as well.

The fishing is carried on very close to shore with live bait. The tuna fishing grounds frequented mostly, as well as the bait grounds, are within the territorial limits of Cuba.

The estimated annual catch of 1,000 to 1,500 tons of tuna is canned and marketed in Cuba as "Bonito en Aceite." This supply satisfies about 85 percent of the present domestic demand.

The tuna taken are small (average weight between 3 and 4 pounds on the South Coast) and are approximately 75 percent blackfin tuna and 25 percent skipjack. On the North Coast somewhat larger fish are taken, with skipjack making up a larger proportion of the catch.

INTRODUCTION

Large schools of several species of tuna during some seasons of the year were observed in preliminary surveys conducted in the Gulf of Mexico during 1951 and 1952 by the exploratory fishing vessel Oregon. This vessel is operated by the

U. S. Fish and Wildlife Service's Branch of Commercial Fisheries. It was apparent that many of the problems in the development of tuna fishing in the Gulf would be similar to those encountered and, to some extent, solved by the small but successful Cuban tuna fishery of the adjacent Caribbean. As a result I was sent to Cuba in late August 1952 to get first hand information on fishing practices in this interesting fishery.

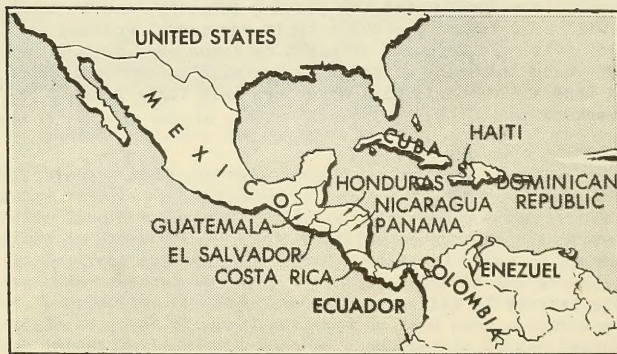


FIGURE 1 - MAP OF CUBA AND SURROUNDING COUNTRIES.

* FISHERY METHODS AND EQUIPMENT SPECIALIST, EXPLORATORY FISHING AND GEAR DEVELOPMENT SECTION, BRANCH OF COMMERCIAL FISHERIES, U. S. FISH AND WILDLIFE SERVICE, PASCAGOULA, MISSISSIPPI.

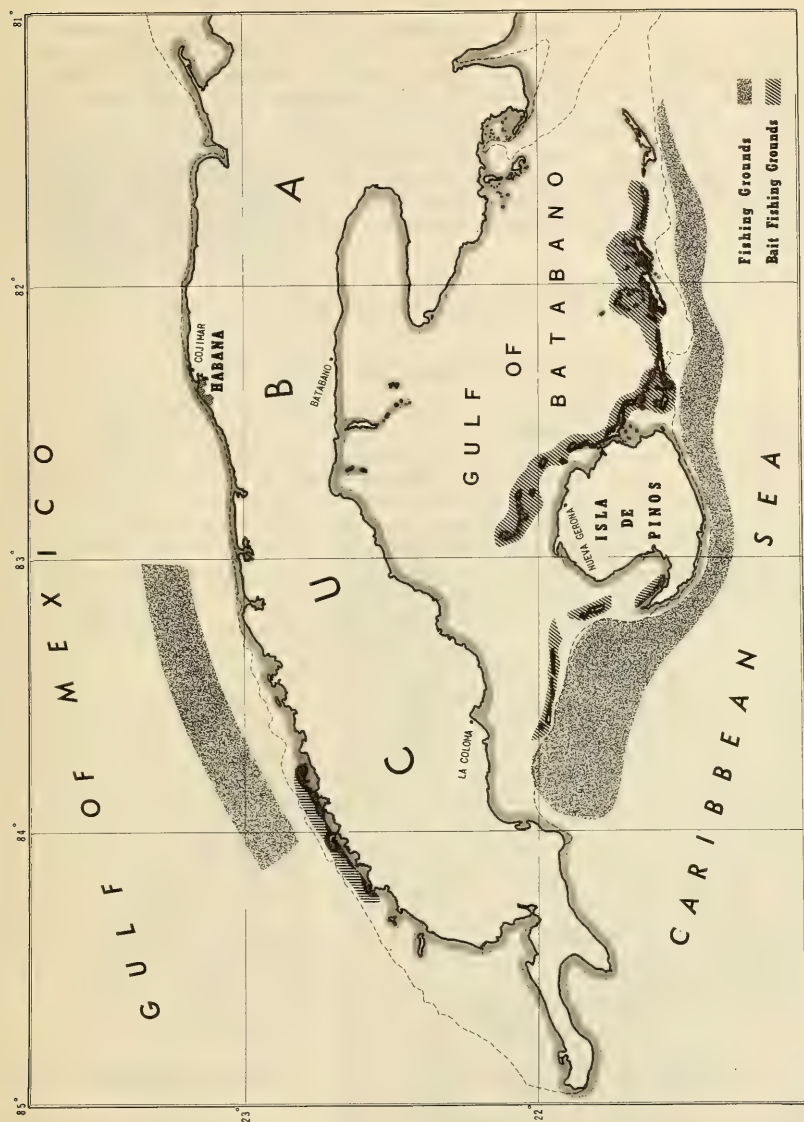


FIGURE 2 - WESTERN CUBA, SHOWING TUNA AND BAIT FISHING GROUNDS.

HISTORY

There have been few changes in tuna-fishing techniques in Cuba since the production of tuna was begun on a commercial scale in 1940. Local fishermen of Japanese ancestry, using live-bait fishing methods similar to some of those used in the Japanese fishery, provided the initial impetus and figured prominently in the actual fishing for tuna until 1942 when they were restricted to occupations ashore. At the time of my visit only two fishermen of Japanese ancestry were active in the Cuban tuna fishery. Cuban fishermen have continued the fishery since 1942, but the Japanese influence is strongly reflected in the methods used. Even the eating habits aboard the Cuban tuna vessels show Japanese influence. The Cuban fishermen's "pescado crudo" is the Japanese fishermen's "sashimi," except that it is prepared differently.

The Cuban tuna fishery began as a part-time operation. The fishermen still depend on other fisheries and the canneries on other raw materials during the off-season.

LOCATION OF FISHERY AND FISHING RANGE

The fishing vessels working the south coast of Cuba base at Nueva Gerona on the Isle of Pines, and at Batabano and La Coloma on the mainland (fig. 2). On the North Coast, Cojimar has had a small cannery in operation less than a year, with two boats fishing tuna. Cuba is perhaps unique in having a fishery for pelagic fish operating to a large extent within its own territorial waters. The

tuna boats seldom fish more than three miles from shore or reef on the South Coast, and 10 miles from the reef are extreme distances. Only one commercial fisherman spoke of going beyond 10 miles off the reef for tuna. On the North Coast most commercial tuna fishing is done from 3 to 15 miles outside the reef. The range of the fishery is limited so that very little fishing is done offshore. In fact, the vessels fish only a short distance from port. This is probably dictated by the methods and gear used, which make it necessary to fish within a few miles of a good live-bait resource. However, the general opinion of the fishermen is that tuna are quite common outside the reefs all along the Cuban coasts, and further offshore generally average larger in size.

FISHING VESSELS AND CREWS

The typical Cuban tuna-fishing vessel (fig. 3) is a modified sloop with a gaff-rigged mainsail, usually with a flying jib.



FIGURE 3 - THE CUBAN TUNA-FISHING BOAT MAGDALENA.

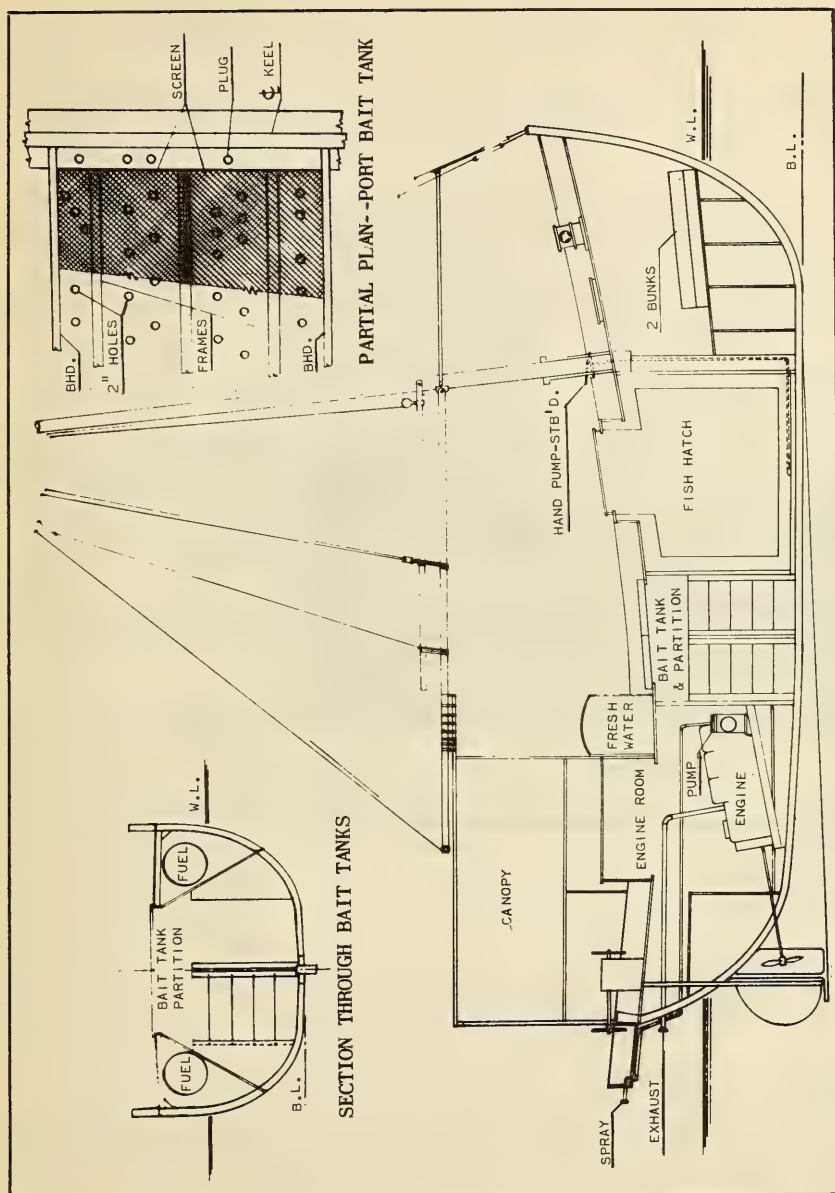


FIGURE 4 - INBOARD PROFILE OF CUBAN TUNA-FISHING BOAT SHOWING TYPICAL ARRANGEMENT.

The sails are not used regularly, but are still carried aboard in case of emergency. The largest tuna boat in Cuba is 58 feet long; the smallest 30 feet. The shallow draft ($3\frac{1}{2}$ to $4\frac{1}{2}$ feet) is important in working the shoal areas during daily bait-catching operations. There is very little special equipment, and accommodations for the crew are simple. The smaller vessel upon which I sailed (and incidentally the smallest tuna boat in Cuba) had a 30 hp. main engine without reverse gear or clutch, while the larger vessel had a 70 hp. engine with a clutch and reverse gear.

The typical crew consists of 7 men: captain, engineer-cook, majuero (chummer), and 4 fishermen. Two of the fishermen usually have an apprentice status and wash all dishes, police the vessel, and do the bidding of the older fishermen, particularly the captain. The captains of both vessels that I accompanied were unquestionably the most able and hard-working men aboard, and they were obeyed most implicitly. On the fishing grounds the captains steer the vessels. Steering is done from the stern when actually fishing.

FISHING GEAR AND METHODS

Cuban fishing equipment is made by the fishermen aboard the vessel. New gear is required often and some gear preparation is in progress almost every day. The

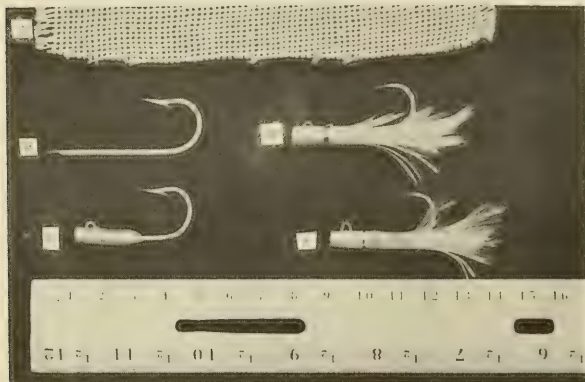


FIGURE 5 - CUBAN FISHING GEAR. (A) TOP - MATERIAL USED IN THE CONSTRUCTION OF THE BAIT SEINE. (B) UPPER LEFT - HOOK USED IN PREPARATION OF JIG. (C) LOWER LEFT - HOOK SHORTENED WITH WEIGHTED SHANK. (D AND E) - FINISHED BARBLESS JIGS WITH FEATHERS AND FEATHER GUARDS MADE OF FRIGATE BIRD QUILLS.

feathered squids are made from a small halibut-type hook ($5/8$ inch from tip to shank) which is shortened, the barb removed (the point is flattened on the inside toward the shank), and weighted. This is a minor modification but may be of considerable importance in landing blackfin tuna (*Parathunnus atlanticus*), the species common in Cuban waters. The jaw structures of this species are weak, and the point of the hook, flattened transversely to the direction of pull, presumably does not tear out the jaws as easily as does the round pointed hook. Lead is poured into small dies, usually bamboo, to form

the squid shank. For larger fish the fishermen make up a double hook rather than use a larger size. The hollow quills from man-o-war birds and vultures are trimmed, split, and pulled over the squid and provide excellent protection for the feathers. The bamboo fishing poles are obtained on the Isla de Pinos. Some of the fishermen rig their poles with two lines. The line not in use is held against the pole by hooking the squid into a small square hole cut near the base of the pole. The poles vary in length from 10 to 13 feet and are light and flexible. Spares are carried forward in the standing rigging to be made up in case of breakage or loss. The Japanese custom as practiced in the Hawaiian Islands where each fisherman has three or four poles in readiness for different size fish and for fish of different behavior was not in evidence. Since the fish are uniformly small this is not necessary. The line from the tip of the pole to the leader is equivalent in diameter

to 30- or 36- thread hard-laid seine twine. The preferred material is four strands of nylon of about 6-thread diameter, twisted together and tightly served with a hard-finished cotton thread. However, many poles were observed to be made up with hard-laid seine twine of either 30- or 36-thread. Several types of swivels



FIGURE 6 - FISHING OFF THE STERN OF THE MAGDALENA.

and snap-ons, some homemade, are used on the end of the line. The leader wire (30 inches from snap-on to squid) is No. 6 (.016 inch diameter with a 58-pound breaking point) with a special dull finish. The over-all length of the line and leader is such that when the butt of the pole is in position the hook will swing in just about even with the left armpit. As the fish swings inboard it is caught solidly against the body of the fisherman with the left arm. The pole is then cradled in the crook of the right arm and the right hand is brought over to remove the hook from the mouth of the firmly held fish. While fishing the base of the pole rests in a small bag or socket suspended with a piece of line around the waist. This bag, which rests against the groin, is the equivalent of the American harness. The Cuban bag is made up by the fishermen from pieces of a small automobile tire wired together. This in turn is carefully covered and padded with sewn burlap. The typical Japanese fishing dress was modified to a one-armed canvas jacket with a reinforced left armpit. Although all fishermen wear wide straw hats, one-armed canvas jackets, and "jolongos" (as the pole socket is called), the remainder of their dress seems to be a matter of personal preference.

The fishing routine on the 11 days I was aboard varied little. In the morning, once bait was obtained, the shortest possible course was made to the one- to three-mile area paralleling the keys and reef. When the reef was passed, all hands began putting on jackets and preparing to fish. The fish were usually found first by the presence of birds hovering over the school. On no occasion was there more than a ten-minute delay in finding fish on the grounds. When coming toward fish the procedure was to slow the speed of the vessel to approximately two knots, and

circle wide to port or starboard throwing handfuls of bait off the starboard side, amidships. If fish broke water in the wake, which was always watched very closely at this time, the spray system would be started on the stern and pole fishing would begin. The captain would steer from the extension wheel as shown in figure 6. The engineer would complete his adjustments below, batten the engine-room hatch and join the others on the stern. Once the fish began working and biting well the captain would gradually straighten course to intercept the nearest likely-looking school in the vicinity. The innumerable small schools in the one- to three-mile belt off the fringing reef made this procedure seem quite effective. Often just as action from one school slackened, another would be intercepted and action would pick up. This interception course from school to school would often result in changes in size and species of fish.

Occasionally, during a lull in the bait fishing, especially when no birds were immediately in sight to indicate the presence of fish, supplementary fishing was done with a trolling jig. The speed of the vessel was increased, and a jig



FIGURE 7 - TUNA STRIKING NEAR THE STERN.

strike would usually be followed by circling and chumming. The effectiveness of this method of finding fish was rather poor, as often the strike would be a barracuda or dolphin. The small tuna, especially the blackfin, usually tore off the jig even at the comparatively slow speeds of 5 to 7 knots, and in all cases the fish taken had the throat torn and the neck broken. (These conditions parallel the experience of the U. S. Fish and Wildlife Service's Oregon with the blackfin tuna in the Gulf of Mexico.)

Considerable time was spent by the Cuban fishermen in "string" chumming on little or no signs of fish. This seemed a very extravagant use of bait, but was explained on the basis of the inevitable bait mortality. The expenditure of bait is not only conditioned by the fish encountered and the way they bite but how crowded the bait is in the tanks, the appearance of the bait, the time of day, and the quantity left. The tuna often came in ahead of the stern of the vessel and intercepted the bait as it worked toward the stern. The fishermen work from the stern

only, and make no effort to work the quarter of the vessel. The spray nozzles send all water directly astern. This spray resembles a shower of feed and helps to obscure the fishermen and vessel.

The tuna on the south coast of Cuba apparently do not travel or feed in any particular direction. The fishermen believe that they are not migratory, and that some are always present. The current flows to the west on a rising tide and to the east on an ebbing tide. During pole fishing in midday and early afternoon, the speed of the vessel while working fish would often be increased to three knots. Later in the evening a slower speed of two knots was maintained. The best fishing occurred between 5:30 p.m. and sundown. No early morning fishing was done as during that period bait was caught for the day's fishing.

In trolling, a single No. 7 barbed hook with shaped eye was used. Short sections of discarded manila rope were combed out, worked through the eye, and seized to the shank to form a primitive but effective jig. A single strand of pliable 20-gauge wire was used for trolling line (it greatly resembles baling wire). These lines when taken in were made up quickly by making figure-eight loops from palm to elbow. The fishermen explained that the wire was used to get greater depth for the lure.

The birds seen over the fish in the south of Cuba were not identified. Mention should be made of the common occurrence of one or two large sharks in schools of tuna. The sharks, which the fishermen ignore, do not attempt to take tuna as they are caught, and the fishermen often work their squids right on the shark's back. However, occasionally a large barracuda appears. When this happens, two or three of the men immediately stop tuna fishing and catch and remove the barracuda from the school of tuna.

BAIT

The live bait used by the Cuban tuna fisherman is primarily the majua (Jenkinsia lamprotaenia), a very small fish about 1 to 1½ inches long. This species schools well, follows the boat, and lives an average of one day in the Japanese-type bait wells. A second species called cabezona by the Cubans and hardhead by Americans (Atherinomorus stipes) is taken indiscriminately with the majua and is

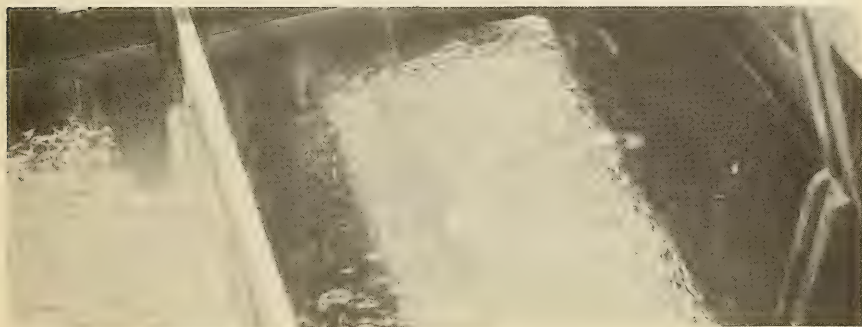


FIGURE 8 - MAJUA IN THE BAIT WELL.

usually considered by the fishermen as identical. It is quite different in appearance, however, and is the more hardy of the two species. These two bait species are the stand-by of the Cuban tuna fishery. There is an anchovy (called the catucuche by the Cubans) which, according to the fishermen, would rival or surpass either of the bait fish mentioned if they would live in the tank. Except on rare occasions, when small numbers are taken and there is no crowding, the catucuche will not live to reach the fishing grounds. When taken in a bait net in large numbers, they are released by the fishermen and no attempt is made to use them. Another bait fish, sardina de ley, is used occasionally, but they are much larger, occasionally growing to six inches. They are not sought out for bait, but are taken along with the majua. The fishermen spent considerable time telling me of the importance of the lunar cycle in predicting the presence, size, and hardiness of the majua.

After the day's fishing was concluded, there always remained a scoop or two of bait in the tank. The tank would then be emptied of all dead bait, and the inboard plugs (shown in fig. 4) removed. The eviscerated catch of tuna would be dumped in this tank for washing and then iced-down in the fish hatch. The holes were left open overnight.

The following morning all the bait left over from the previous day would be found alive and active, which suggests that probably the high bait mortality is

due to poor water circulation and overcrowding. Although the open holes at the bottom of the tank were not plugged until a quantity of new bait was added, the old and new bait did not escape. The fishermen contend that majua and cabezone will quickly escape from a hole in the sides of a vat or well, but will not go through a hole in the top or bottom. This is undoubtedly the reason the floating bait receiver was lined with webbing on the sides to prevent escapement of very small majua, and not similarly lined on the bottom.



FIGURE 9 - THE FLOATING BAIT RECEIVER BEING TAKEN TO SHALLOW WATER.

except for the fact that they were a little larger and had a more bluish color on the back, the majua del golfo resembled the majua.

The prime source of the majua used for bait is the waters surrounding the innumerable keys in the Gulf of Batabano and, in particular, the keys most accessible

A potential bait source possibly exists on the fishing grounds. Huge schools of a species called majua del golfo were seen on the fishing grounds off the south coast of Cuba 2 or 3 miles from the reef. Ex-

to the reef and to the passage to and from Nueva Gerona and the fishing grounds. The bait is most abundant in water from 3 to 5 feet in depth over eel-grass bottom but is also found over sandy bottom, shoals, and protected and exposed reefs.



FIGURE 10 - NET FULL OF BAIT READY FOR TRANSFER TO THE RECEIVER.

The fishermen claim that majua exist in all Cuban waters but are particularly abundant in protected shoal areas. Although there is a sufficient supply available most of the time, there was some expression of concern over the occasional bait scarcity. Few of the fishermen that I met on the South Coast had much experience in other Cuban fishing areas, but many believed the Gulf of Guanacabibe north of Cape San Antonio and the northeast coast of Cuba back of the fringing reef have an abundant supply of majua. The fishermen emphasized the marked fluctuations of availability of bait. It was either very abundant in many areas or scarce in all areas.

The gear used to catch bait consists of a 12- to 15-foot flat-bottom skiff, a 20- to 35-fathom bait net, and a floating bait receiver. The bait net is 4 feet deep on the wings, 7 feet deep in the center where the bag tapers to a square, and is sewn to iron or brass rods to make a square opening the same size as the sliding door in the receiver. The usual procedure in taking bait is for the large vessel to approach a key as close as the shallow water will permit and for the skiff to proceed from there with two men. The majua are sometimes found in extremely shallow water, as little as six inches deep. The fishermen do not seem to be worried about the majua escaping

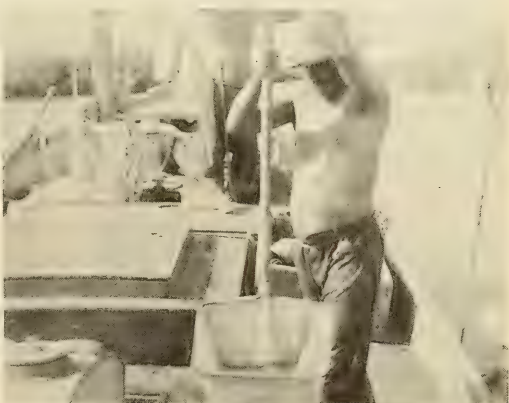


FIGURE 11 - TRANSFERRING MAJUA FROM THE RECEIVER TO THE BAIT WELL WITH A DIP NET.

after they are located, although it may occasionally take many hours in the skiff to find a suitable school. Most sets with the bait net are made from the skiff with one man rowing and another paying the net off the stern. The majua, when frightened or crowded, head into deeper water, so often the bait net is paid out in a straight line against the side of a channel or up against the shore of a key. The wings are then worked in gradually, the man in the center of the net working the bag into deeper water and forming an area for the majua to school in. Meanwhile the wings are moved around behind the fish to form a full circle. Then both wings are worked together down to the pocket. The majua are crowded through the sack of the net and into the receiver without handling. The receiver is then taken out to the large boat by two or three men wading or swimming, and the majua are scooped directly from the receiver into the live wells. Stories were told of



FIGURE 12 - BLACKFIN TUNA WITH LARGE PECTORAL FINS AND SKIPJACK WITH SMALL PECTORALS. A DOLPHIN IS IN THE FOREGROUND.

one set from which 4 or 5 vessels took full tanks of bait, with many majua released. While I was aboard the two vessels, some sets were made on as little as two or three scoops of bait. The fishermen believe certain areas in Cuba are overfished for bait because of their accessibility.

THE CATCH

The blackfin tuna (*Parathunnus atlanticus*) and the skipjack or oceanic bonito (*Katsuwonus pelamis*) comprise the commercial tuna catch of Cuba. Fishermen on the south coast talk of occasionally taking 50-pound tuna, usually on a jig. From the description these could be yellowfin tuna (*Neothunnus argentivittatus*). In the course of each day's fishing another species of tuna was taken in small numbers. The fishermen call this comevivieres. The flesh is dark and the fish are not accepted at the canneries. Positive identification was not made. On the South Coast the annual average size of both the commercial species as received at the canneries is about three pounds, with blackfin tuna accounting for 75 percent of the catch. On the North Coast the average size is 6 to 8 pounds, but skipjack account

for 75 percent of the catch. Several schools of mixed fish were abandoned by both the Atun and Magdalena because the fish fell below the one-pound minimum size accepted by the cannery. The canneries were reluctant to accept a load in which one-pound fish exceeded ten percent of the total catch. The smallest tuna of both commercial species in the catches I saw measured between $7\frac{1}{2}$ and 9 inches in total length. Fishermen spoke of taking 4- and 5-inch blackfin and skipjack

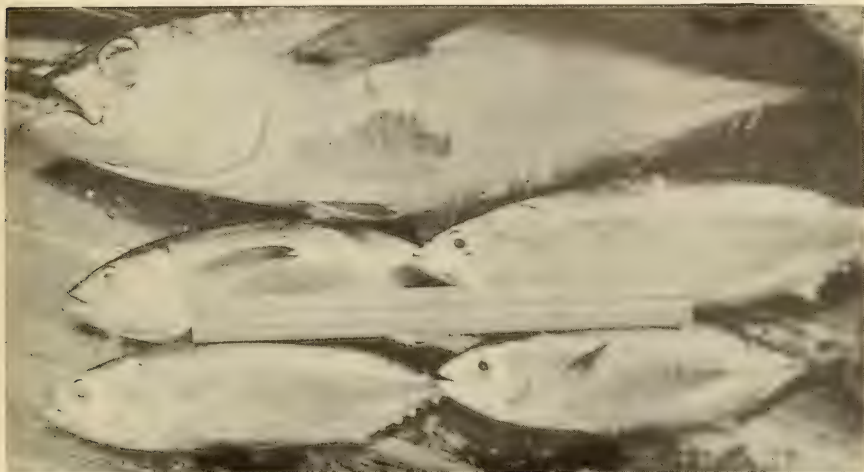


FIGURE 13 - BLACKFIN TUNA, UPPER AND UPPER LEFT, AND THREE WHITE SKIPJACK.

tuna in August 1951, and also mentioned finding many smaller than this in the stomach contents of the catch. A specimen $1\frac{1}{2}$ inches long taken from the stomach of a 4-pound blackfin was identified as a young blackfin by Giles Mead of Stanford University.

During the six days I spent aboard the Magdalena, 1,180 fish were taken weighing approximately 3,200 pounds eviscerated. Twelve hours were actually spent on the fishing grounds. The rest of the time was spent in traveling to and from the fishing grounds and looking for bait. The catch was better than average for the season. Five days were spent aboard the Atun and 1,100 fish were taken weighing approximately 3,400 pounds eviscerated. Twenty-one hours were spent on the fishing grounds. The usual trip from the Isle of Pines takes from 4 to 7 days.

SEASONS

In 1951 most of the bonito boats, as the Cuban tuna boats are called, fished tuna the entire year for the first time. Before this the season began in March or April and ended in September or October. The interim period, November through February, was spent by the same vessels and crews fishing for spiny lobster.

I was unable to determine whether this sudden change to year-round fishing was brought about by an unusual cycle of abundance, pressure from boat owners, unusually good weather (bad weather could understandably drive the fishermen from the open-water tuna grounds to the more protected spiny lobster grounds in the Gulf of Batabano), or a combination of these circumstances. The tuna are very abundant early in the season, bite well, but are very small. The men aboard the Magdalena

reported an 8,000-pound day in April 1952, consisting of two-pound eviscerated fish. Toward the end of the season (September-October) the fish are larger, less abundant, and do not bite so well.

I was able to spend one day at sea off the North Coast aboard a sport-fishing vessel. Excellent trolling was found 10 to 12 miles north of Havana. Skipjack (10 to 15 pounds each) were taken along with blackfin (5 pounds each), both



FIGURE 14 - PART OF AN AFTERNOON'S CATCH READY FOR ICING.

from the same schools. Many schools were seen in every direction, and the use of binoculars showed more bird signs beyond the range of normal vision. These fish were generally fast moving, feeding, and working toward the west. This was said to be their normal direction of movement in the area.

PROCESSING AND MARKETING

The processing of tuna, as well as most of the fishing, was on a part-time basis in 1952. Five companies operated 7 canneries, working on tuna for some portion of the year; two at Batabano, two at LaCaloma, and one each at Nueva Gerona, Pinar del Rio, and Cojimar. Estimates of the Cuban pack for 1952 are upward of 100,000 cases (24 cans, about $9\frac{1}{2}$ ounces each) labeled "Bonito en Aceite" to compete with a similarly-named product imported from Spain. The local product retailed at 42 to 45 cents a can in 1952, while the similar Spanish product retailed up to 75 cents a can. It is estimated that local production would satisfy about 85 percent of the Cuban market demand in 1952.

The tuna were produced by 23 boats, 21 of them fishing on the South Coast. The Magdalena produced 60 tons of eviscerated tuna in 1951. The Atun produced

35 tons in the period from April to the end of August 1952. Estimated total tuna landings for 1952 are approximately 1,300 tons of eviscerated fish. The tuna-fishing boats are owned by the canneries or the cannery operators and the fishermen are paid on a share basis. The tuna price in 1952 was \$200 a ton with no species differential. Under the share system, the cost of fuel, lubricating oil, ice, and water is deducted from the gross. Of the remaining amount the boat owner gets 25 percent and the fishermen share 75 percent equally. The fishermen pay for the provisions. Usually the captain receives 10 percent of the boat owner's share in addition to his regular share as a fisherman.

ACKNOWLEDGMENTS

Extremely helpful in making arrangements for collecting the information contained in this report were Mr. Guy Bush, Agricultural Attache of the United States Embassy at Havana, Dr. Gerardo Canet, Banco de Agricola e Industriales de Cuba, and Mr. Casimiro Tellaeche. I am also indebted to many other persons connected with the Cuban fishing industry for assistance, particularly to Captain Enrique Marrero of the fishing vessel Magdalena and Captain Filipe Canoa of the Atun, and the crews of these vessels.

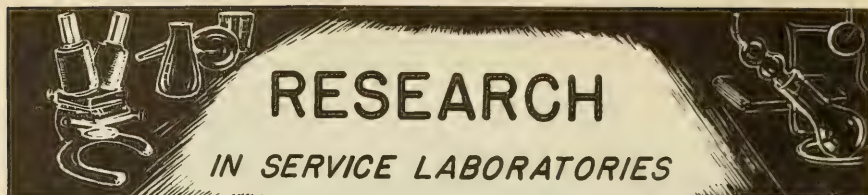


"LITTLE TUNA" OF THE ATLANTIC AND GULF COASTS



Recent developments offer some encouragement for the commercial canning of "little tuna," Euthynnus alletteratus, along the Atlantic and the Gulf Coasts. For many years this fish has been caught in varying amounts in these areas. From Cape Cod to the Florida Coast, and also along the Gulf, the little tuna has been reported in abundance at certain seasons of the year. It has also been reported to be in fair abundance in various parts of the Caribbean Sea.

—Fishery Leaflet 353



Progress on Projects, December 1952

REFRIGERATION: Freezing and Storing Alaska Shrimp and Dungeness Crab: Seven experimental packs of frozen Dungeness crab meat were examined. The sample packs were prepared to study the effect of a low storage temperature (-20° F.) and improved packaging methods on the keeping quality of the meat. Organoleptic and physical tests on these samples after nine weeks of storage revealed that all test packs were in good marketable condition. Appearance of all samples was good. Flavor and texture of all were good, but differences among the packs were evident. There was an indication that the superior packs were (1) those vacuum packed in cans and stored at -20° F.; and (2) those covered with dilute brine (2-percent salt solution), vacuum sealed in cans, and stored at 0° F. (Ketchikan)

* * * * *

Cold-Storage Life of King and Silver Salmon: Only slight changes occurred in the king and silver salmon steaks and in the drawn (heads-on) fish stored at 0° F. for three months. Results of organoleptic tests on the frozen salmon are:

Quality Ratings (Organoleptic Tests) of Frozen King and Silver Salmon

		Quality Rating of Baked Salmon Steaks		
Salmon Species	Quality Factor	Before Storage (Initial Examination)	After 3 Months of Storage	
		Immediately after drawn (heads-on) fish were frozen, steaks were cut, baked, and examined.	Drawn (heads-on) fish were frozen; immediately after freezing, steaks were cut, glazed, packaged, and stored at 0° F. After 3 months of storage steaks were baked and examined.	Drawn (heads-on) fish were frozen, ice-glazed, packed in wax-lined wooden boxes, and stored at 0° F. Steaks cut from these frozen fish after 3 months of storage were baked and examined.
King	Flavor	Good to Excellent.	Good. Incipient rancidity at tips of steaks.	Good.
	Texture	Somewhat Soft.	Somewhat Soft.	Somewhat Soft.
	Appearance	Good to Excellent.	Good.	Good.
Silver (Lot A)	Flavor	Good to Excellent.	Good. Slight rancidity at tips of steaks.	Good. Slight rancidity at tips of steaks.
	Texture	Good to Excellent.	Good.	Good.
	Appearance	Good to Excellent.	Considerable surface curd.	Good. Very little surface curd.
Silver (Lot B)	Flavor	Good to Excellent.	Good.	Good. Slight rancidity at tips of steaks.
	Texture	Good to Excellent.	Slight rancidity at tips of steaks.	Good.
	Appearance	Good to Excellent.	Considerable surface curd.	Moderate amount of surface curd.

Freezing, Glazing, and Thawing Salmon for Canning: Preliminary data on the characteristics of canned Alaska redsalmon prepared from brine-frozen fish follow:

Characteristics of Canned Alaska Red Salmon Prepared from Brine-Frozen Fish

Method of Thawing Fish Prior to Canning	Sample Number	Material Added to Each 1/2-Pound Flat Salmon Can			Characteristics of Canned Product			
		Water		Salt	Drained Weight	Total Liquid	Free Oil	Total Salt (NaCl)
		Milliliters	Grams	Percent ¹	Grams	Milliliters	Milliliters	Percent
In Air	1	0	1.94	0.85	206.8	21.5	1.5	2.04
	2	0	1.94	0.85	200.8	23.5	1.5	1.58
	3	0	1.94	0.85	200.6	23.5	3.5	1.65
In Still Fresh Water	1	0	1.94	0.85	198.8	26.0	2.5	1.58
	2	0	1.94	0.85	203.5	28.0	5.0	1.23
	3	0	1.94	0.85	204.0	24.0	2.5	2.18
In Running Fresh Water	1	0	2.54	1.12	202.3	27.0	2.0	1.76
	2	0	2.54	1.12	207.1	26.0	2.5	1.64
	3	0	2.54	1.12	193.7	30.0	2.0	1.65
In Running Fresh Water	4	18.0	2.83	1.15	211.2	35.5	2.0	1.66
	5	18.0	2.83	1.15	212.2	32.5	2.0	1.63
	6	18.0	2.83	1.15	201.9	41.0	2.0	1.70
In Saturated Brine	1	0	0.65	0.29	214.3	20.5	2.0	1.48
	2	0	0.65	0.29	200.3	23.0	1.5	1.60
	3	0	0.65	0.29	210.8	17.5	2.0	1.15

¹/ ESTIMATED.

(Seattle)

* * * * *

Freezing Fish at Sea, Defrosting, Filletting, and Refreezing the Fillets: Modifications were made on the absorption refrigeration unit aboard the research trawler Delaware which increased the refrigeration capacity by 60 percent. Further changes are being made in an attempt to raise the refrigeration output to the rated capacity of 20 tons. A new 40 kw. Diesel electric generator and switch panel were installed, tested, and approved. Stability tests were carried out on the Delaware. Results of these tests will determine the limitations which must be placed on the weight and location of a new brine-freezer.

A consumer taste panel has been built up to 120 families who will make regular tests on fish frozen at sea. The panel consists of families located over a wide area in metropolitan Boston and includes families in various income groups. (Boston)

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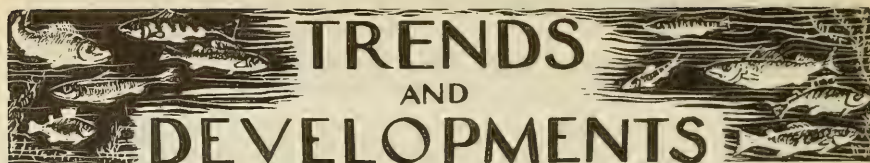
BYPRODUCTS: Vitamin Content and Nutritive Value of Fishery Byproducts: Nicotin assays of samples of fish meal were completed and the results follow:

Niacin Content of Samples of Menhaden and Crab

Sample	Sample Number	Source of Sample	Niacin Content of Meal, As Received
			Micrograms Per Gram
Crab Meal	1	Maryland	37
	1	Delaware	55
	2	Virginia	50
Menhaden Meal	3	North Carolina	53
	4	Florida	68
	5	"	70
	6	Louisiana	53

(Seattle)





TRENDS AND DEVELOPMENTS

Additions to the Fleet of U. S. Fishing Vessels

A total of 40 vessels of 5 net tons and over received their first documents as fishing craft during November 1952--12 less than in November 1951. Florida east coast and Florida west coast led with 7 vessels each, followed by Louisiana with 4 vessels, the Bureau of Customs of the Treasury Department announced.

Vessels Obtaining Their First Documents as Fishing Craft, November 1952					
Section	November		Eleven mos. ending with November		Total
	1952	1951	1952	1951	1951
	Number	Number	Number	Number	Number
New England	4	4	30	35	36
Middle Atlantic	1	4	24	34	34
Chesapeake	4	8	63	32	36
South Atlantic	9	13	84	113	118
Gulf	14	7	144	161	173
Pacific Coast	5	9	200	276	284
Great Lakes	1	4	13	25	25
Alaska	2	3	88	68	71
Hawaii	-	-	-	3	3
Total	40	52	646	747	780

NOTE: VESSELS HAVE BEEN ASSIGNED TO THE VARIOUS SECTIONS ON THE BASIS OF THEIR HOME PORT.



California Sardine Fishery--State Regulation Proposed

A proposal that legislation be enacted to give full regulation over the California sardine fishery to the State Fish and Game Commission and the Marine Research Committee was adopted by the Sardine and Mackerel Industry Advisory Committee in a meeting held in November. This action is the result of what appears to be the most disastrous season in the history of the California sardine fishery.

The total catch of sardines at California ports in 1952 up to January 21 was only 3,316 tons as compared with 115,562 tons for the same period in 1951.

Unanimous agreement by representatives of fishermen, cannery workers, boat owners, processors, and sportsmen on the need for immediate sardine fishery management signaled the close of a year's debate over the issue of restrictive regulation consistently sought by the State Department of Fish and Game. The request for such regulation was based upon warnings issued by the Department's specialists that the California sardine fishery was in a precarious position with poor prospects for the future.

The concern over dwindling supplies of Pacific mackerel and possible scarcity of anchovy and jack mackerel was indicated by the Committee's inclusion of these

fisheries also in the management proposal. It called for investment of full regulatory powers over the four species in the Fish and Game Commission, acting upon maximum-minimum season and bag-limit recommendations of the Marine Research Committee.

Commission control will be asked for a two-year period starting with the 1953 season, the California Department of Fish and Game announced in a November 26 news release. All commercial fishing laws are now set by the State Legislature.

The Marine Research Committee directs the study of the sardine life history and oceanic conditions affecting the supply. The investigations are made by scientists from the California Academy of Sciences, Department of Fish and Game, Hopkins Marine Station of Stanford University, U. S. Fish and Wildlife Service, and the University of California's Scripps Institution of Oceanography.



SARDINE PURSE SEINERS DOCKED AT SAN PEDRO, CALIFORNIA.



California Sardine Fishery Outlook

For the next few years the sardine industry of California will be dependent for any significant improvement in the catch on the sardines that have been spawned off Southern California and Baja California (chiefly the latter) since 1948, unless the factor of availability should so operate as to increase the catch of older fish. This prediction appears in the latest California Cooperative Sardine Research Program Progress Report (1 January 1951 to 30 June 1952). Under present conditions,

SARDINE (PILCHARD)
SARDINOPS CAERULEA



that portion of the adult sardine population that is available to the California industry is almost totally confined to the waters off Southern California.

so as to increase the catch, must for at least the next two seasons subsist upon the smallest catches in more than a generation.

The consensus is that the industry, if it depends on the sardine alone, and if availability does not operate

There are two valid lines of reasoning leading to predictions of the future catch that agree in principle though not in detail, according to the report. They differ in the weight given the results of separate investigations, the spawning surveys and the young-fish surveys, and in the emphasis placed on the factor of availability.

It will be seen that these two lines of reasoning lead to predictions for the coming season that on the whole are very discouraging.

The first line of reasoning and the evidence upon which it is based can be summarized as follows:

1. The 1951 surveys indicate spawning population almost double the size of that of 1950. This could indicate either that sardines of the 1948 year class did not spawn appreciably in 1950 or that some other year class, presumably the 1949 year class, first spawned in 1951 and did not enter the 1951/52 catch in proportion to its true abundance. Since one-half of all sardines are mature at a length of 8.5 inches and all are mature at about 9.3 inches, one would expect that one-third to one-half of the fish of the 1948 year class would have spawned in 1950 and about three-fourths or more in 1951. If the increase in number of eggs spawned in 1951 was due largely to the increased growth of the fish of the 1948 year class, no increase in catch should be anticipated. If, however, the increase was brought about by fish of the 1949 year class, then this year class is larger than previously thought and apparently up to now has been distributed to the south of the regular fishing grounds.

2. There is little evidence on the size of the 1951 year class.

3. In the 1951/52 season, the 1948 year class made up the bulk of the catch and the 1949 and 1950 year classes appeared to be of below average size. Even assuming that in the 1952/53 season the entering 1951 year class will be of about average size, the outlook for the 1952/53 season is not a good one. This is only a guess, however, since the fish might be less available than in previous seasons and the catch would be even lower than expected, or the fish could be more available and the catch would be greater than might be expected. One indication that the catch statistics do not reflect the total population with full accuracy is the increase in spawning, as mentioned above.

The second line of reasoning and the supporting evidence can be summarized

1. During 1951/52, the 1948 year class contributed 65 percent of the tonnage taken and older year classes 30 percent. These groups supplied 120,000 tons during that season and it is improbable that they will contribute any increased tonnage in the coming seasons. A decrease of 50 percent or more is much more likely. As a result, in the next one or two seasons the fishery will be more and more dependent on the younger year classes spawned in 1949, 1950, and 1951. Age analysis of the fish in the 1951/52 catch indicates that the 1949 year class is a small one, and this is borne out by the results of the young-fish surveys, which covered Baja California as well as the California fishing grounds. These surveys indicate that the 1949 year class is about one-sixth as abundant as the 1948 group. Since the 1948 year class as it has appeared in the catch is of only average or slightly less than average strength, there is little hope for an improvement in fishing based on the 1949 year-class contribution.

2. The young-fish surveys of abundance of the 1950 and 1951 year classes show approximately equal abundance for each of these groups when about six months old (spawning surveys indicate an egg and larvae abundance of approximately one to two for 1950 and 1951), and that their strength is only slightly greater than that of 1949.

3. There is little hope for improved fishing in the 1952/53 or 1953/54 seasons and the evidence suggests that conditions may be worse. The factors that affect availability are as yet unmeasured. If availability should be exceptionally high it might tend to offset the sparsity of fish.

The work of the California Cooperative Sardine Research Program has been undertaken by five scientific agencies under the direction of the Marine Research Committee of the California Department of Natural Resources. The five agencies are: California Academy of Sciences, California Department of Fish and Game, Hopkins Marine Station (Stanford University), Scripps Institution of Oceanography (University of California), and the U. S. Fish and Wildlife Service.



Federal Purchases of Fishery Products

FRESH AND FROZEN FISH PURCHASES BY DEPARTMENT OF THE ARMY, NOVEMBER 1952:

For the military feeding of the U. S. Army, Navy, Marine Corps, and Air Force, the Army Quartermaster Corps in November 1952 purchased 2,052,565 pounds (valued at \$1,102,939) of fresh and frozen fishery products (see table). This was a decrease of 31.8 percent in quantity and 26.5 percent in value as compared with the purchases in October, but an increase of 15.8 percent in quantity and 13.5 percent in value over November 1951.

The average price per pound for fishery products purchased in November 1952 was 53.7 cents as compared with 45.7 cents in October. This seems to indicate that there were some purchases of higher-priced fishery products.

Purchases of Fresh and Frozen Fishery Products by Department of the Army (November and the First Eleven Months, 1952 and 1951)							
Q U A N T I T Y				V A L U E			
November		January-November		November		January-November	
1952	1951	1952	1951	1952	1951	1952	1951
Lbs.	Lbs.	Lbs.	Lbs.	\$	\$	\$	\$
2,052,565	1,772,725	31,165,904	29,618,339	1,102,939	971,490	14,418,659	12,610,571

January-November purchases in 1952 rose 5.2 percent in quantity and 14.3 percent in value, compared with the corresponding period in 1951. The average cost per pound was 46.3 cents for the first eleven months in 1952 as compared with 42.6 cents for the same period in 1951. This indicates that probably more higher-priced fishery products were purchased in 1952 than in 1951.



Gulf Exploratory Fishery Program

SMALL CATCHES OF SHRIMP TAKEN BY "OREGON" OFF CAPE SAN BLAS, FLORIDA (Cruise No. 17): Shrimp catches, too small to be of commercial significance, were taken by the Service's exploratory fishing vessel Oregon on a cruise off Cape San Blas, Florida. Drags were made in the area southeast of Horn Island Pass, Mississippi, towards Cape San Blas, Florida, in depths of 5 to 120 fathoms. Small amounts of large (6 heads-off shrimp per pound) brown-grooved shrimp (Peneaus aztecus) were taken in 56-fathom depths off Cape San Blas.

Spot (Leiostomus xanthurus) were caught in a 40-foot flat trawl in 30-fathom depths southwest of Cape San Blas at the rate of 800 pounds per hour. Flounder (Paralichthys squamilentus) were caught at the rate of 102 pounds per hour in 55 fathoms of water south of Cape San Blas, Florida.

This cruise was interrupted by mechanical difficulties. The Oregon sailed from Pascagoula, Mississippi, on November 6 and was forced to return to that port on November 10. The vessel resumed the cruise on November 13 and returned on November 17.

* * * * *

"OREGON" REPORTS GOOD SHRIMP CATCHES IN NORTH CAMPECHE AREA (Cruise No. 18):
The production of shrimp (Penaeus duorarum) in the area north of the present shrimp

grounds in the Campeche area appears to offer the best possibilities of extending the shrimp fishing area during the late fall. This statement is based on the results of Cruise No. 18 of the Service's exploratory fishing vessel Oregon. The area southwest of the present fishing area did not produce favorably by comparison. Good results were obtained in positions near 20°20' N. by 91°28' W. The commercial fleet was informed by radio. Northwest of this position shrimp were found but not in such heavy concentrations.



THE SERVICE'S EXPLORATORY FISHING VESSEL OREGON.

area the Oregon worked toward the Florida coast, making a 200-fathom drag on the northeastern Yucatan shelf. In passage to Florida, several hours were spent in plotting depths over the area designated by some charts as a shoal off the Yucatan shelf. Bad weather hampered operations off the Florida coast. Drags were made southeast of Cape San Blas in depths of 15 to 40 fathoms; drags in 60- and 90-fathom depths completed the cruise. Tuna-bait fishing at night was also successfully carried out off Arcas Reef. The Oregon returned to Pascagoula December 19.

On this cruise the Oregon departed from Pascagoula on December 2 and proceeded directly to the Campeche shrimp-fishing area. Shrimp trawl drags were made in the 15- to 30-fathom range east and south of Arcas Reef. A series of drags was completed northeast of Arcas along the northern edge of the present shrimp fishery. From the Campeche

In night "light" fishing operations, two species of tuna bait were taken by the Oregon. An 11-foot-square lift net was lowered over the side with a bright light shining on the water over the net. When sufficient bait collected under the light the net was raised. On one lift the net tore in half from the load of bait. Two species (Jenkinsia lamprotaenia and Sardinella anchovia) of bait were taken. Both species were abundant and schools could be detected easily with the depth recorder. Several scoops of each species were put in a small live-bait tank. All of the Jenkinsia died within a week but the Sardinella were hardier, and approximately

50 fish were alive even after the Oregon docked. The bait was observed to be most abundant in the vicinity of Arcas Reef in 10 fathoms or more of water. Little tuna (Euthynnus alletteratus) were taken on trolling lines off the Florida coast. Trolling lines were out at all times during the cruise when the Oregon was underway, but no other tuna were taken.



Metal Cans--Shipments for Fishery Products, October 1952

Total shipments of metal cans for fish and sea food for October 1952 amounted to 9,682 short tons of steel (based on the amount of steel consumed in the manufacture of cans), a decrease of 35 percent when compared with the corresponding month in 1951 and 14 percent less than in September. Most of the decline is attributed to the very small pack of California sardines during October. This is based on a report issued by the Bureau of the Census on December 29.



For the first 10 months of 1952, metal-can shipments for fishery products totaled 95,264 short tons of steel as compared with 93,937 short tons of steel during January-October 1951.

NOTE: STATISTICS COVER ALL COMMERCIAL AND CAPTIVE PLANTS KNOWN TO BE PRODUCING METAL CANS. REPORTED IN BASE BOXES OF STEEL CONSUMED IN THE MANUFACTURE OF CANS, THE DATA FOR FISHERY PRODUCTS ARE CONVERTED TO TONS OF STEEL BY USING THE FACTOR: 23.0 BASE BOXES OF STEEL EQUAL ONE SHORT TON OF STEEL.



North Pacific Exploratory Fishery Program

"JOHN N. COBB" INVESTIGATES WINTER HERRING FISHING IN SOUTHEASTERN ALASKA (Exploratory Cruise No. 14): For six weeks the John N. Cobb, the Service's Branch of Commercial Fisheries exploratory fishing vessel, explored the commercial herring possibilities of certain southeastern Alaskan waters.

The primary purpose of this exploration was to ascertain if in southeastern Alaskan waters during November and December previously unknown stocks of herring moved inshore in commercial quantities. Waters which were explored included the bays and the inlets off Icy Strait, Chatham Strait, Stevens Passage, Seymour Canal, the Sitka Sound area, Sea Otter Sound, Frederick Sound, and lower Clarence Strait. Sets were made in Silver Bay and the south arm of Kendrick Bay. Small fish were found in both of these areas. The majority were in their second year with an average length of approximately $6\frac{1}{2}$ inches. Evidence of similar small fish was found in Port Camden and Lisianski Inlet. With the exception of Tongass Narrows, large adult fish were not noted in any appreciable quantities in any of the areas explored. The vessel left Seattle on this cruise on November 4 and returned on December 19.

The investigation was a cooperative study made by the U. S. Fish and Wildlife Service and the Alaska herring industry. The industry supplied the purse seine and other items of fishing gear, and the vessel and personnel were furnished by the U. S. Fish and Wildlife Service. Exploratory fishing operations were under the direction of the Service's Branch of Commercial Fisheries and the biological activities were directed by the Branch of Fishery Biology. A biologist of the Alaska Department of Fisheries joined the boat and assisted in the explorations and the tagging of herring.

In an attempt to gain information on the migration patterns, herring were tagged in the south arm of Kendrick Bay (2,000 fish) and in Tongass Narrows (3,400 fish) with nickel-plated steel "belly" tags.



THE SERVICE'S EXPLORATORY FISHING VESSEL JOHN N. COBB INVESTIGATES WINTER HERRING FISHING IN SOUTHEASTERN ALASKAN WATERS.

Milo Bell Joins Fish and Wildlife Service as Consulting Engineer

The appointment of Milo C. Bell, of Blaine, Washington, as a consulting engineer to assist in the further development of a Federal fishery program for the Columbia River Basin was announced December 30 by the Director of the Fish and Wildlife Service.

The problem of successfully getting fish over the numerous power dams now being constructed and planned for the future in the Columbia River is so serious that the future value of the multimillion-dollar fishing industry is being threatened, according to the Service's Director. To meet this situation, the States of Washington and Oregon are cooperating with the Fish and Wildlife Service and other agencies in studies to develop practical methods for guiding adult fish upstream over the dams, and the young fish down. These studies involve both specialized engineering and biological skills.

Bell, who is an authority in his field, will serve as engineering consultant to the Director in all matters relating to fishways at dams and as liaison officer of the Service with the construction agencies both in Washington and in the field. Initially, he will be headquartered in Seattle, Washington.

Bell, who comes to the Service from the State of Washington's Department of Fisheries where he has been chief technical adviser to the Director of Fisheries, is particularly well qualified to handle his new Federal post. He has developed fish-passage devices for the State of Washington; was chief engineer for the International Pacific Salmon Fisheries Commission during the construction of the eminently successful \$2 million fishways at Hells Gate Canyon on the Fraser River; and served as consultant to the Corps of Engineers during the building of the first major fishway at Bonneville Dam and later on the major fishery problems related to the construction of the McNary Dam fish facilities and the fish passages for the Dalles Dam.



Oyster Grounds in Chesapeake Bay Photographed by Maryland

The use of an underwater camera to survey the oyster resources in Chesapeake Bay was attempted by the Maryland Commission of Tidewater Fisheries late in October, according to a news release issued by the Maryland Department of Research and Education. The purpose of the work of the Commission was to delineate the natural bars of the State and to indicate the extent of oyster populations on them. It is hoped that these underwater pictures will settle many arguments as to how many and where the oysters are, and possibly justify a complete up-to-date Bay-wide survey. If this can be done, it will clear up arguments concerning which parts of Chesapeake Bay and its tributaries grow oysters naturally and which do not.

The camera, developed by an Ardmore (Pennsylvania) firm, is a stereoptic device which photographs through a large pyramid of filtered sea water. It is operated from a crane and comes to rest near the bottom, at which time the flash takes place. From 3 to 5 minutes are required per picture. Development of the camera has been quite expensive, and operation costs in the field are high. Its use in Maryland to date, however, has been on an experimental basis with a prearranged sharing of the expense by the manufacturers and the Commission.

The Commission has not made public the results of the underwater photographic exploration as the study is still in a preliminary stage. Those who have worked closely with the problem of oyster populations are not sanguine in their expectations of substantial results from this particular approach (photography) which is not new. The major difficulty is not in the actual photographing of the bottom but in the interpretation of the pictures. Oysters harmonize with the bottom to a remarkable degree. Frequently they are encrusted by growths, and at times rest entirely under attached forms--both plant and animal--such as eel grass, barnacles, sea squirts, sponges, and others, through which they are not visible and cannot be photographed. Bottom sampling (through diving or perhaps the use of regular types of gear) done by competent scientists for the purpose of spot sampling to check the disclosure of the pictures could be made to serve a useful purpose in developing factual information, which is the end sought.



UNDERWATER CAMERA BEING LOWERED TO PHOTOGRAPH MARYLAND OYSTER BEDS IN CHESAPEAKE BAY.



Pacific Oceanic Fishery Investigations

LONG-LINE TUNA FISHING EXPERIMENTS BY "JOHN R. MANNING" (Cruise No. 13):
Long-line tuna fishing experiments were carried out by the Service's Pacific Oceanic Fishery Investigations research vessel John R. Manning during a 51-day cruise which ended December 6. The area of operations was from the vicinity of Oahu south along the meridian of 150° to a point 5° south of the equator and then back northward along the line of 170° W. longitude. Also, samples of sea water from the equatorial region were collected for shipment to the Scripps Institution of Oceanography, University of California, for study of their radio activity as a clue to circulation in the ocean.

An innovation in long-line design was tested by setting at each station 10 baskets of gear in which the "sekiyama" was replaced by a similar length of No. 261 cotton line. The new gear, which performed as well as the regular line in every respect, showed promise of giving better catches with simpler and cheaper gear than that in commercial use at present.

Yellowfin tuna were fished with long lines south of 6° N. latitude with the best catch of 6.95 fish per 100 hooks made at 2° N. The results of the other stations indicated a low abundance of yellowfin tuna both to the north and south of the equator with the average catch being 2.51 fish per 100 hooks between 6° N. and 3° S. latitude. North of 6° N. latitude the catches consisted of big-eyed tuna and albacore tuna. Along 170° W. longitude between 5° S. and 4° N. latitude, catches were generally poor with the best catch of 3.64 yellowfin tuna per 100 hooks made right on the equator. Tuna catches were somewhat better south of the equator than north. The average yellowfin catch for this line, which included 10 fishing stations from 4° N. to 5° S., was 1.95 fish per 100 hooks.

Frozen sardine and squid were alternated as bait on successive baskets throughout each set. Bait preferences of the different species of tuna were found to vary with the big-eyed tuna decidedly favoring sardine while the skipjack seemed to show some preference for squid. Yellowfin tuna appeared to take both baits impartially.

Two special stations were worked at 2° N. latitude 150° W. longitude where a regular station had resulted in a good catch of 6.95 yellowfin tuna per 100 hooks. A 24-hour fishing series of setting and hauling 10 baskets of gear every 4 hours around the clock showed that yellowfin catches were best in the set hauled at 1300 hours with a catch of 6.45 yellowfin tuna per 100 hooks. Only sharks were caught in the sets hauled after sunset.

At another special station, where 40 baskets of gear were set in the morning and retrieved 10 at a time at 4-hour intervals, the best catch (4.84 yellowfin per 100 hooks) was made on the section retrieved at 1800 hours.

A Japanese tuna long-line boat was sighted about 300 miles north of Canton Island. This is the first such sighting by a POFI vessel, although it has been known that Japanese tuna boats are fishing southwest of Hawaii.

This 5,000-mile cruise of the John R. Manning produced important contributions to the understanding of seasonal and local variations in the abundance of tuna in the rich band of tuna grounds which POFI explorations have discovered along the equator.



Service's Fish-Cookery Demonstration Program, 1952

A total of 184 fish-cookery demonstrations were presented during 1952 by the U. S. Fish and Wildlife Service as part of its fishery educational and market development program. Although the major portion of these were given for school-lunchroom cooks and managers, 10 were for homemakers or Extension Service groups, and 16 for institutional personnel, Army groups, or college classes. Fourteen states plus the Territory of Alaska were hosts to the Service's home economists for these meetings which were attended by a total of 8,925 persons.

The demonstrations for school-lunchroom personnel far outnumbered the meetings held for other groups because of the recognized importance of the school lunchrooms as an influence on the eating habits of the nation. These demonstrations were attended by an average of nearly 50 people who were responsible for the feeding of almost 3,000 children daily. The children, through the manager's menu choices and the quality of the food served, learn food preferences which influence their eating habits at home and in later life. Therefore, the frequent serving of well-prepared fish in their lunchrooms can do much to encourage greater utilization of this valuable protein food.

In the program with school-lunch personnel during 1952, the Fish and Wildlife Service continued its policy of concentrating most of the meetings in a few states to obtain extensive coverage within a state. On this basis 22 demonstrations were given in Pennsylvania, 44 in New York State, 25 in Louisiana, 36 in Illinois, 12 in Minnesota, and 8 in Michigan. Those given in Louisiana during 1952 supplemented the 23 given in 1951 so that the State has had altogether 48 demonstrations. In addition to the extensive programs conducted in these states while school was in session, a few demonstrations were given for summer "workshop" groups. Nebraska, Kansas, Tennessee, Georgia, and Oregon were states in which one to four such demonstrations were given. Most of those who came to these meetings were leaders in their respective states who carried what they learned back to those unable to attend.

The 26 demonstrations for persons other than school-lunchroom personnel were presented before a wide variety of groups. These included Army Quartermaster Corps subsistence classes, professional dietician's association meetings, college home economics classes, vocational schools, cooks and nutritionists from hospitals and other institutions, meetings of Extension Service leaders, and large groups of homemakers.

Plans for continuing the demonstration program for school-lunch personnel during 1953 have already been laid. In Alabama, 34 meetings are scheduled; New Jersey will have 22; and approximately 30 additional demonstrations have been planned for Illinois. By the end of this school year, all of the schools in these states will have had an opportunity to be represented at one or more fish-cookery demonstration meetings.



Wholesale and Retail Prices

WHOLESALE PRICES, NOVEMBER 1952: Prices for edible fishery products were up in November 1952, reversing the downward trend reported in October. With bad weather curtailing fishing in most areas, a strong upward trend usually takes place at this time of the year. The over-all edible fish and shellfish (fresh, frozen, and canned) wholesale index for November was 112.7 percent of the 1947-49 average

(see table)--10.9 percent above October and 3.5 percent above November 1951, the Bureau of Labor Statistics of the Department of Labor reported.

Except for fresh-water fish, products included in the November subgroup for drawn, dressed, or whole finfish were in good demand and prices were up. Fresh large drawn offshore haddock and fresh and frozen Western dressed halibut sold at substantially higher prices in December 1952 than in the previous month and November 1951. Dressed king salmon prices also rose but were considerably lower than during the same month a year earlier. From October to November 1952, prices for

Table 1 - Wholesale Average Prices and Revised Indexes for Edible Fish and Shellfish, November 1952 and Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg.Prices (\$)		Indexes (1947-49 = 100)							
			Nov. 1952 ¹	Oct. 1952	Nov. 1952	Oct. 1952	Sept. 1952	Nov. 1951				
ALL FISH AND SHELLFISH (Fresh, Frozen, and Canned)						112.7	101.5	108.1	108.9			
Fresh and Frozen Fishery Products:						126.8	108.1	119.5	115.6			
Drawn, Dressed, or Whole Finfish:						138.5	111.8	129.3	124.3			
Haddock, large, offshore, drawn, fresh	Boston	lb.	.17	.11	177.0	113.4	110.5	141.3				
Halibut, Western, 20/80 lbs.; dressed, fresh or frozen	N.Y.C.	"	.44	.42	137.0	130.0	162.5	102.5				
Salmon, king, lge. & med., dressed, fresh or frozen	"	"	.49	.46	109.7	101.8	117.5	121.3				
Whitefish, mostly Lake Superior, drawn (dressed), fresh	Chicago	"	.44	.46	109.1	112.8	223.1	125.2				
Whitefish, mostly Lake Erie pound or gill net, round, fresh	N.Y.C.	"	.46	.53	92.0	106.2	166.8	110.4				
Lake trout, domestic, mostly No. 1, drawn (dressed), fresh	Chicago	"	.59	.49	120.9	99.4	85.0	116.8				
Yellow pike, mostly Michigan (Lakes Michigan & Huron), round, fresh	N.Y.C.	"	.41	.43	96.1	99.7	167.1	115.2				
Processed, Fresh (Fish and Shellfish):						113.8	103.7	107.7	105.1			
Fillet, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.38	.27	129.3	91.9	103.8	132.8				
Shrimp, lge. (26-30 count), headless, fresh or frozen	N.Y.C.	"	.61	.57	96.4	89.3	94.9	78.9				
Oysters, shucked, standards	Norfolk area	gal.	5.25	5.00	129.9	123.7	123.7	128.3				
Processed, Frozen (Fish and Shellfish):						102.8	103.6	107.6	104.7			
Fillet: Flounder (yellowtail), skinless, 10-lb. pkg.					Boston	lb.	.34	.36	119.2	124.4	124.4	147.2
Haddock, sml., skins on, 10-lb. cello-pack	"	"	.25	.25	93.9	93.0	93.9	106.9				
Ocean perch (rosefish), skins on, 10-lb. cello-pack	Gloucester	"	.24	.25	114.4	119.2	121.6	125.2				
Shrimp, lge. (26-30 count), 5-lb. pkg.	Chicago	"	.62	.60	94.9	92.6	100.3	77.1				
Canned Fishery Products:						93.3	92.0	91.3	99.1			
Salmon, pink, No. 1 tall (16 oz.), 48 cans per case	Seattle	case	18.44	17.94	96.5	93.9	93.9	109.6				
Tuna, light meat, solid pack, No. 1/2 tuna (7 oz.), 48 cans per case	Los Angeles	"	14.50	14.50	90.5	90.5	90.5	81.2				
Sardines (pilchards), Calif., tomato pack, No. 1 oval (15 oz.), 48 cans per case	"	"	9.38	9.38	109.4	109.4	109.4	84.1				
Sardines, Maine, keyless oil, No. 1/2 drawn (3 1/2 oz.), 100 cans per case	N.Y.C.	"	7.20	7.20	76.6	76.6	68.6	113.9				
1/ REPRESENT AVERAGE PRICES FOR ONE DAY (MONDAY OR TUESDAY, IF AVAILABLE) DURING WEEK BEGINNING NOVEMBER 10.												

¹/REPRESENT AVERAGE PRICES FOR ONE DAY (MONDAY OR TUESDAY, IF AVAILABLE) DURING WEEK BEGINNING NOVEMBER 10.

fresh-water fish items dropped and were lower than a year earlier, but lake trout prices at Chicago rose. Drawn, dressed, or whole finfish prices for November 1952 as a group were up 23.9 percent over October and 11.4 percent over November 1951.

Fresh processed fish and shellfish prices moved higher following the same trend as unprocessed finfish. Products under the fresh processed fish and shellfish subgroup in November sold substantially above the same month in 1951 and October 1952. The only exception was fresh haddock fillets which sold somewhat lower than a year earlier.

Frozen processed fish and shellfish prices showed a mixed trend in November 1952. Substantially lower prices for flounder fillets and ocean perch fillets were

not quite offset by higher prices for haddock fillets and shrimp. The frozen fillet market was considerably weaker than in the same month of 1951; the market for frozen shrimp registered a strong upward trend because cold-storage stocks were considerably below a year earlier. The index for processed frozen fishery products in November 1952 dropped 1.8 percent below the same month in 1951 and 0.8 percent below the previous month.

Higher prices for canned pink salmon accounted for the increase in the canned fishery products subgroup index. The November 1952 index for this subgroup was up 1.0 percent over October 1952, but was still 5.9 percent below November 1951. Prices for canned tuna and California sardines were substantially higher than a year earlier, but those for canned pink salmon and Maine sardines were considerably lower.

RETAIL PRICES, NOVEMBER 1952: Retail prices of all foods purchased by moderate-income urban families dropped very slightly from October 15 to November 15, 1952, but were higher (0.4 percent) than during the same period in 1951. This was the third straight month that these prices declined, which is outstanding in view of the fact that for the past few years prices rose at this time of year. Prices of all finfish (fresh, frozen, and canned) also declined (0.7 percent) from the previous month and were lower (4.3 percent) than a year earlier.

Table 2 - Adjusted Retail Price Indexes for Foods and Finfish
November 15, 1952, with Comparisons

Item	Base	I N D E X E S		
		Nov. 15, 1952	Oct. 15, 1952	Nov. 15, 1951
All foods	1935-39 = 100	232.3	232.4	231.4
All finfish (fresh, frozen, and canned) ..	do.	335.9	338.1	351.1
Fresh and frozen finfish	1938-39 = 100	290.8	292.2	295.8
Canned salmon: pink ..	do.	433.1	437.4	477.4

Retail prices for fresh and frozen finfish from October 15 to November 15 decreased 0.5 percent at a time when prices were normally rising, and were 1.7 percent lower than in mid-November 1951. Canned pink salmon prices continued downward as they have each month since June 1951, and were 1.0 percent lower than in mid-October and 9.3 percent below mid-November 1951.

Table 3 - Average Retail Prices and Price Ranges of Individual Finfish Products,
November 15, 1952

Product	Unit	UNITED STATES		
		Range of Prices		Average Prices
		Nov. 15, 1952	Nov. 15, 1952	Oct. 15, 1952
Frozen Finfish Fillets:				
Ocean Perch/	lb.	29-69	45.6	45.7
Haddock/	lb.	29-69	50.5	50.7
Canned Finfish:				
Salmon, pink	16-oz. can	39-89	53.6	54.1

1/ PRICED IN 46 CITIES OUT OF 56. 2/ PRICED IN 47 CITIES OUT OF 56.

In mid-November 1952, frozen ocean perch fillets retailed at an average price of 45.6 cents per pound and frozen haddock fillets at an average of 50.5 cents per pound. During the same period in 1951, retail price averages were: frozen ocean perch fillets 46.3 and frozen haddock fillets 50.9 cents per pound. Canned pink salmon retailed at an average price of 53.6 cents per 16-oz. can in mid-November 1952, compared with 59.1 cents per can in mid-November 1951.



International

NORTHWEST ATLANTIC FISHERIES COMMISSION

REVIEW OF ACTIVITIES, AUGUST-NOVEMBER 1952: Italy Ratifies Convention: The Government of Italy deposited its instrument of ratification of the Northwest Atlantic Fisheries Convention on August 19, 1952. The member Governments of the Commission are now: Canada, Denmark, Iceland, Italy, Norway, Portugal, Spain, United Kingdom, and United States. The Government of France is taking action toward early ratification.

Net-Mesh Regulation in Subarea 5: The Depositary Government transmitted the Commission's proposal concerning the net-mesh regulation for haddock fishing in sub-area 5 to Contracting Governments on August 28. The regulation will become effective four months following acceptance of the proposal by Canada and the United States, the Governments holding membership on the panel for sub-area 5.



Annual Report: The Commission's report for the year ending June 30, 1952, is in the hands of the printer and distribution is anticipated during January 1953. The report contains four parts: (1) Administrative report for the year ended June 30, 1952, (2) Report of the Second Annual Meeting, (3) Mesh regulation to increase the yield of the Georges Bank haddock fishery, (4) Statistics of landings of groundfish from the Convention area.

Panel and Committee Meetings: A meeting of the Panel for subarea 1 was held at Copenhagen, Denmark, on October 8. Delegates were present from Denmark, Norway, Portugal, Spain, and United Kingdom; and observers attended from France, Iceland, United States, and the International Council for the Exploration of the Sea. The report of the meeting to the Commission contains two resolutions dealing with (1) improved statistics and (2) coordination of 1953 research programs.

A meeting of the Special Committee on the Commission's research program was held at Copenhagen on September 26-27. A draft program was prepared and arrangements for further committee meetings have been made. A preparatory discussion will be held at St. Andrews, N. B., in late January 1953 and a three-day meeting of the Committee will be held beginning May 21, 1953 at New Haven, Connecticut, immediately before the Third Annual Meeting of the Commission.

Third Annual Meeting: The 1953 Commission Meeting will be held at New Haven, Connecticut, U.S.A., from May 25 to 30, inclusive. The dates have been selected to conform with availability of meeting space and living accommodations at Yale University.

FOOD AND AGRICULTURE ORGANIZATION

COUNCIL'S SIXTEENTH SESSION CONVENES IN ROME: The Sixteenth Session of the Council of the Food and Agriculture Organization of the United Nations (FAO) convened in Rome, Italy, on November 17. The main topic of discussion was the FAO report, "The State of Food and Agriculture (including fishery products): Review and Outlook 1952." At this session the Council will for the first time be substituting for the Conference in reviewing the world food and agricultural situation, according to a State Department press release of November 17.

The FAO report presents a detailed picture of the changes in world production and consumption of agricultural products from 1950/51 to 1951/52 and a brief outlook for production in 1952/53. It also contains a review and outlook by regions and a similar analysis of major commodities. Fisheries are included.

Progress reports were made to this session of the Council on investment for agricultural development, production of pulp and paper, expanded technical assistance program, locust control, and the progress and improvement of statistical technology.

In establishing the FAO program of work and budget for 1953, the Council reviewed its information, educational, and extension services, and FAO activities in the fields of agriculture. This included the progress in economics, fisheries, forestry, and nutrition.

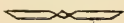
The session was open to the representatives of the 18 governments which are members of the Council. The Fifteenth Session of the Council met in Rome, Italy, June 9-14, 1952.

* * * * *

REVIEW OF TECHNICAL ASSISTANCE PROGRAM: The technical assistance program of the Food and Agriculture Organization of the United Nations (FAO) has developed to a point where it is as large as the Organization's regular program, reported Sir Herbert Broadley, Deputy Director-General and Chief of FAO's technical assistance program, in a recent report to FAO's Council in session in Rome, Italy, during November 1952. This year's technical assistance budget of \$6,300,000 is more than three times the amount spent by FAO during its first year. Such an expansion is accounted for by the increasing ability of underdeveloped countries to utilize the technical assistance provided, as well as by the need for supporting projects required to make the first ones undertaken wholly effective. FAO has signed agreements with 52 countries to provide technical assistance, and has recruited 890 experts, including those who have completed their assignments, to do the work. Included are fisheries projects and experts.

FAO has reached the position where requests from its member nations for technical aid are beginning to show signs of outstripping available resources, and priorities must soon be initiated. FAO will follow the principle that priority will be given to projects where it is clear that the requesting government is determined to implement them and undertake the full financial and administrative commitments implied in their adoption. It has always been the policy of FAO to require governments asking for aid to meet the local operating costs of the FAO experts.

The expanded technical assistance program is shaping into a three-stage program, beginning with advice and planning, passing to implementation and pilot projects, and ending when governments take over the full operation of development plans on a wide basis with general assistance from FAO. The stages are necessarily of a long-term nature and could not show immediate results.



Australia

CANNED FISH PRODUCTION, 1951/52: The total production of canned fish in Australia during the 1951/52 season totaled 7,140,331 pounds, an increase of only one percent over the 1950/51 season pack. Barracouta (46 percent) and Australian salmon (44 percent) comprised 90 percent of the output (see table).

Australian Canned Fish Pack, 1950/51-1951/52		
Species	1951/52	1950/51
	lbs.	lbs.
Australian salmon	3,089,803	2,948,964
Barracouta	3,269,900	3,504,007
Tuna	142,057	244,075
Whitebait	27,479	120,593
Miscellaneous	520,096	320,692
Total	7,049,335	7,140,331

1/ FISCAL YEAR JULY 1 THROUGH JUNE 30.

* * * * *

TUNA CANNER RECEIVES RECORD ORDER FROM UNITED KINGDOM: A

Sydney tuna canner has received an initial order for approximate-

ly £80,000 (US\$177,300) worth of canned tuna from a major distributor in the United Kingdom, reports the October 1952 Fisheries Newsletter of the Commonwealth Director of Fisheries. This order (for a million cans) is believed to be the record commercial export order for Australian canned fish. It will be packed from this season's tuna catch at the company's canneries at Eden and Narooma, N.S.W.

Some Australian canned tuna had previously been shipped to the same United Kingdom firm. Distribution by one of the largest group of retail food stores in Great Britain has been scheduled for this previous order. It is estimated that this distributor has more customers than the entire population of Australia. These early shipments will give the United Kingdom housewife her first taste of Australian canned tuna.

The Australian canning firm has opened up new markets for canned fish of all types in Kenya, Uganda, Mauritius, and Zanzibar. The Managing Director of the cannery, who has just returned from England, said: "...our problem was to establish a well-spread market, here and overseas, to enable us to plan continuous production in all our canneries. The economic position today is quite obscure and our company must do everything possible to keep its employees and fishermen fully engaged, as well as assist the country's export drive."

The Australian tuna industry is in its infancy, dating back only four years. The Australian cannery Director indicated that the high capital outlay for vessels suitable for catching tuna at present hinders further development. He further indicated that "Government assistance in expanding these activities could be of material benefit towards increasing food production, as well as helping the export trade and stabilizing the position of the fishermen upon whom, of course, the industry ultimately depends." The Commonwealth Government has assisted in developing the industry, and investigations which should expand the tuna catch are being carried out.

Reports have been received from the fishermen that more boats will fish for tuna this season. The Australian cannery announced that a substantial part of the return from the season's catch will be passed on to the fishermen. In order to do this they increased tuna prices to: albacore, northern and southern bluefin, and yellowfin, 8d. (7½ U.S. cents); and striped tuna, 6½d. (6 U.S. cents).

* * * * *

SPINY LOBSTER FISHERY, 1951/52: Production of spiny lobster in Australia during the 1951/52 season totaled 14,002,545 pounds (round weight), of which

10,957,000 pounds were packed for export and 3,045,545 pounds for domestic consumption (see table 1), reports the October 1952 Fisheries Newsletter of the Commonwealth Director of Fisheries.

Spiny-lobster exports from Australia in the 1951/52 season totaled 3,606,095 pounds of tails and 54,472 pounds of whole spiny lobsters (table 2), with a total value of £1,777,880 (US\$3,940,000). The United States received 95 percent of these exports, nearly all in the form of frozen tails.

There was an increase of 42 percent in dollars earned for the spiny-lobster industry as compared with the previous fiscal year. This large increase in dollar earnings was due to a rise in price during the year from 6s.3d. (69 U.S. cents) per pound to 7s. (77 U.S. cents) per pound, and a 25-percent increase in quantity of spiny lobsters exported to the United States.

There has been a steady increase in Australian exports of spiny-lobster tails from fiscal year 1948/49 to 1951/52, while exports of whole spiny lobsters have declined (see table 3).



AUSTRALIAN SPINY LOBSTERS BEING WEIGHED BEFORE PACKING.

Table 1 - Australian Spiny-Lobster (Crayfish) Production by States, 1951/52 ¹	
State	Quantity Pounds ²
Western Australia	7,790,946
Tasmania	2,052,129
South Australia	3,000,000
New South Wales	655,470
Victoria	504,000
Total	14,002,545
¹ /FISCAL YEAR JULY 1, 1951, TO JUNE 30, 1952.	
² /ROUND WEIGHT (LANDED WEIGHT).	

Western Australia Fishery: About 60 percent of the Australian spiny-lobster production and 77 percent of the exports of this shellfish originate in Western Australia. There has been a steady increase in production in that State for the past 3½ years. However, the number of boats fishing has also increased. Spiny-lobster fishing came into prominence in the State in 1947/48. The next year production was doubled because fishermen realized that a livelihood could be obtained from spiny-lobster fishing by working about eight months of the year. There seems to be a slight decrease in production per boat in recent years. Although there is little evidence to prove depletion, there are definite signs of strain. Before 1952 in certain areas of Western Australia it was the exception rather than the rule to fish deeper than 25 fathoms; now pots are being set in depths up to 40 fathoms, and some of the larger boats have dropped their pots in 50 fathoms with a consequent loss of gear. The spiny lobsters have shown a decline in size since fishing in deeper water began, and there is a possibility that the boats are encroaching on the natural maturing ground of the shellfish. This appears to indicate that the "accumulated stocks" have been removed, and that the fishery is beginning to "settle down." In

order to stabilize the industry, Western Australia has placed certain restrictions, such as closed seasons, on spiny-lobster fishing. The minimum length pre-

Table 2 - Australian Spiny-Lobster (Tails and Whole) Exports by State of Origin and Country of Destination, 1951/52¹

Item	Quantity		Item	Quantity	
	Tails	Whole		Tails	Whole
By State of Origin:	Pounds	Pounds	By Country of Destination:	Pounds	Pounds
Tasmania	17,400	33,480	United States	3,593,595	4,255
South Australia ..	556,040	255	Singapore	2,305	43,217
Western Australia.	3,032,655	20,737	Canada	10,195	7,000
Total	3,606,095	54,472	Total	3,606,095	54,472

¹/ FISCAL YEAR JULY 1, 1951, TO JUNE 30, 1952.

scribed for spiny lobsters is 2-3/4 inches measured from the rear ends of the horns to the end of the carapace or body.

The cost of maintaining efficient boats is becoming a great concern to the Western Australian spiny-lobster skippers. Many are finding that production costs are forcing them into an unfavorable position. The general cost of upkeep and fueling is, of course, increasing, but this has been somewhat offset by higher prices. The main factors affecting the industry are the scarcity and cost of wire and bait.

Sheep heads and animal hooves were the popular bait for spiny lobsters, but these have become scarce and fishermen have been forced to use salmon heads from

Table 3 - Australian Spiny-Lobster (Tails and Whole) Exports by State of Origin, 1948/49-1951/52

Fiscal Year	Tasmania		South Australia		Western Australia		Total	
	Tails	Whole	Tails	Whole	Tails	Whole	Tails	Whole
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
1951/52 ...	17,400	33,480	556,040	255	3,032,655	20,737	3,606,095	54,472
1950/51 ...	96,625	-	577,147	-	2,584,493	80,240	3,258,265	80,240
1949/50 ...	31,400	28,112	614,286	3,488	2,004,559	61,766	2,650,245	93,366
1948/49 ...	63,695	73,431	323,741	48,464	1,215,039	60,929	1,602,745	182,824

the southern coast of Western Australia. Because of the increased number of boats operating, a greater number of pots are being used. In one area, fishermen who are now using cane and wire pots, formerly used batten pots which proved unsatisfactory in deep water. The shortage and cost of wire is thus a major factor when considering production costs.

Canada

Canada

BAN ON FOREIGN FISHING VESSELS TO BE LIFTED: The law banning foreign fishing vessels from entering Canadian ports for other than emergency purposes will be repealed, according to the Government's decision announced in a Speech from the Throne in Ottawa at the opening of Parliament on November 20. As of July 1, 1952, it had been announced that this 58-year old law was to be applied with full effect. However, this action was protested by Nova Scotia members of Parliament and the various affected ports on the east coast of Canada, reports a November 21 American Consulate dispatch from Halifax. The Throne Speech said that "to meet conditions resulting from the entry of the Province of Newfoundland into Confederation and the

introduction of new methods of fishing off the Atlantic Coast, a bill to revise the Customs and Fisheries Protection Act will be placed before you." The ban will be lifted by amending the aforementioned Protection Act of 1868 to empower the cabinet to make new regulations allowing foreign vessels to enter Canadian ports for specific purposes; these will include the purchase of supplies, repairs, and other emergencies.

The prohibition against fishing and loitering at sea within territorial waters without permission will be continued. Some provision is also expected to be made for the protection of the equipment of inshore fishermen.

The United States and British vessels will not be affected by this ban. The British are permitted to enter Canadian ports by rights carried over from colonial days; United States vessels hold it by a right granted under an annual Order-in-Council passed by the Federal Government since 1888 extending these special privileges to United States fishing craft under what are known as "modus vivendi" licenses.

* * * * *

LOBSTER FISHERY REGULATIONS UNDER DISCUSSION IN MARITIME PROVINCE: A series of open meetings were held in October 1952 at key points in the Canadian Maritime Provinces' lobster fishing areas. Problems peculiar to this fishery were discussed, reports the November 1952 Trade News of the Canadian Department of Fisheries. These meetings, arranged by the Department of Fisheries, were held at Moncton, N. B., Summerside, P. E. I., Antigonish, and Shelburne, N. S. In attendance were representatives of the Department, the Fisheries Research Board of Canada, the fishermen, and the dealers. A memorandum (previously circulated by the Department suggesting certain changes in the lobster regulations) was used as a basis for discussion.

On the whole, the fishermen were against any major changes in fishing areas or open seasons and as a result no important changes are to be made except in one Bay-of-Fundy district, where there will be two short seasons in the fall and spring instead of one long one from January to July. This was done at the request of the fishermen.

Other matters discussed at the meetings were minimum-size limits, the protection of berried (egg-bearing) lobsters, licenses, and lath spacing. The importance of preventing poaching and the taking of small lobsters was stressed, and it was made clear that this would mean the cooperation of everyone involved in the industry.

The fishermen made many suggestions at the meetings, one of the most frequent being that a minimum fine should be set for each illegal lobster discovered.

The departmental officials told the fishermen that the division of Maritime waters into areas and the setting of different seasons in each appeared to be of little benefit in conservation. The fishermen were informed that the Department's opinions on conservation were based on scientific investigations which had shown that the intensity of fishing for lobsters varied from 50 to 75 percent of the catchable population, an extremely high figure reached in very few fisheries. Lobsters of the size used in the present fishery, when left alone, increase each year about 15 percent in length and 50 percent in weight. Also, that lobsters do not move about much and their populations should be considered local. Tagging has shown that it is not usual for a lobster to move more than three or four miles from any one spot.

An increase in the minimum-size limit of lobsters, in the "canning" areas was suggested by the Department's representatives. The present limit, set earlier this year, is 2-3/8 inches (carapace measure). The proposal was that, for reasons of conservation, it should be raised to 2-1/2 inches.

The fishermen were advised that this year's increase in the minimum-size limit for market lobsters arose from the fact that the State of Massachusetts had adopted the 3-3/16-inch minimum. The Canadian change to that figure from the previous 3-1/8 inches was made because a large part of the Maritime lobster production is sold in Massachusetts and a serious marketing problem would have arisen if no action had been taken.

Under present regulations, a fisherman may take lobsters in only one district each year and may use his boat and gear in only that district. It was pointed out to the fishermen that this seemed to be a wasteful practice, employing more boats and traps than were necessary. However, there was almost unanimous opposition to any change in the present system.

The lobster catch in Canada's Maritime Provinces is worth more to the fishermen than any other single fishery of that area. It provides them with an annual revenue of between C\$11 million and C\$12 million, an income which gains in significance because of its wide distribution. If entirely unrestricted, the lobster resource could easily be overfished. The Canadian Department of Fisheries regulates it by prohibiting the taking of small or berried lobsters and by dividing the Maritime coastline into various areas which have different open and closed seasons. The main objectives are to make possible a maximum catch and at the same time guarantee the survival of stocks for the future. Over the years the lobster industry has changed and developed, and scientists have collected new information on the life history, behavior, and populations of the species.

* * * * *

BRITISH COLUMBIA CANNED SALMON PACK, 1952: The 1952 British Columbia salmon canning season ended November 29 with a total pack of 1,286,468 cases (48 1-pound cans), the Canadian Department of Fisheries reported on December 3. This is 34 percent less than the 1951 pack of 1,955,475 cases; and it is the smallest pack since 1944 when 1,097,000 cases were packed. Substantially smaller packs of coho (silver) and chum (keta) salmon were responsible for most of this decline.

Species	1952	1951	1950	1949	1948	1947
	Cases	Cases	Cases	Cases	Cases	Cases
Sockeye (red) ..	449,174	428,217	408,041	259,880	260,642	286,285
Blueback	5,581	13,224	7,371	6,876	20,307	4,545
Spring (king) ..	9,064	13,631	9,133	21,065	16,438	9,955
Coho (silver) ..	58,514	300,521	109,272	208,063	186,810	140,484
Pink	675,836	735,494	446,516	709,217	321,722	599,212
Chum (keta)	84,547	460,740	498,984	226,241	496,553	460,999
Steelhead	3,752	3,648	3,243	2,381	5,665	3,234
Totals	1,286,468	1,955,475	1,482,560	1,433,723	1,308,137	1,504,714

British Columbia's 1952 salmon fishing season was unpredictable from the start, reports a December 8 Consular dispatch from Vancouver. The industry was faced with complex marketing problems and was, therefore, not prepared for the great all-out efforts of production which marked the war and postwar years. The heavy carryover of canned salmon packed in the previous year provoked a cautious attitude on the part of cannery operators and this resulted in protracted price

disagreements between operators and fishermen. Cycle-year catch records did not offer promise of any great salmon runs. The general forecast, before the season got under way, was for one of a comparatively small operation.

However, the 13,000 fishermen of British Columbia set out in early summer and by the end of August had landed one of the largest total catches of salmon



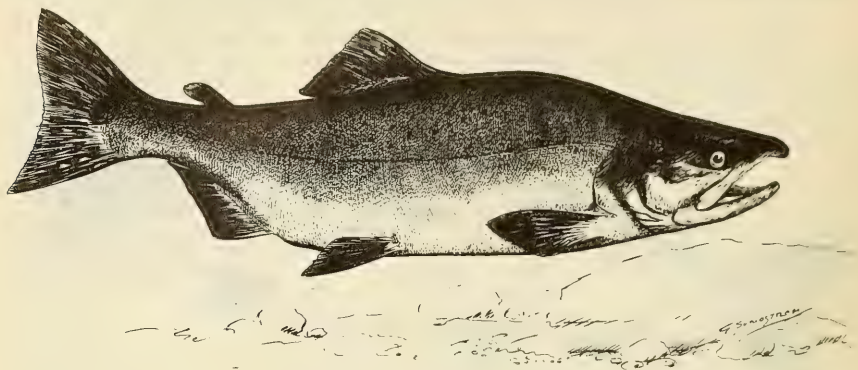
SOCKEYE (RED) SALMON, ONCORHYNCHUS NERKA.

in ten years; this despite a tie-up of several days during which price arguments were resumed. The fishing tempo halted abruptly at the beginning of September as another price dispute tied up the fleet and prevented what might have been a record catch for the season.

Sockeye gill-netters on the Nass River began the season by making heavy hauls. With the few sockeye taken by purse seines in this area, the total passed the quarter million mark before the season closed. On the Skeena River, an all gill-net area, upwards of 800 boats were busy during July and August and by the end of the season had taken 1,269,000 sockeye salmon. Rivers and Smith Inlets did not produce the phenomenal sockeye yields of the previous year but were nevertheless exceptionally good, with a combined season total of 1,270,000 fish. The Fraser River later yielded 1,100,000 sockeye to Canadian fishermen and a like number to American fishermen. This was the Chilko sockeye run and was well above expectations.

Following brief rains in June, a long dry spell gripped the coast, but in July the pink salmon fishing got under way to an auspicious start. The Skeena River run brought a second harvest to gill-netters, in spite of the fact that this run was substantially tapped by purse-seiners operating in Ogden Channel. Between them the two fleets accounted for 1,500,000 pink salmon. Nearly two million of this species were caught by seine in Massett Inlet and Naden Harbour, and a very good run to the central and southern waters of the Queen Charlotte Islands provided better than another million fish. Altogether, with Whales Channel, Bella Coola, and Johnstone Strait contributing strongly, the total catch of pink salmon exceeded 10,000,000 fish. In mid-August a prolonged dry spell caused masses of pink salmon to be temporarily stalled, unable to ascend to the rivers and streams to spawn. In the interests of conservation the Canadian Department of Fisheries made several early closures of salmon fisheries.

Coho salmon was in relatively short supply and the trollers had a somewhat mediocre season, but not as bad as the figures of the pack of this species would



PINK SALMON, ONCORHYNCHUS GORBUSCHA

seem to indicate. There was a very heavy carryover of coho salmon from last season and packers sold most of the catch in fresh or frozen condition rather than add to canned stocks in the warehouses.

The pack of chum salmon was also comparatively very light as fishermen were unwilling to catch this species and sell at prices offered by the operating companies. As a result of the disagreement on prices there was a labor dispute which lasted seven weeks.

Early in December, British Columbia wholesale prices for advertised brands of fancy-quality salmon were reported as follows:

Case	Sockeye	Coho	Pink	Chum
	(Per Case)			
48 1-lb. tall ..	C\$31.50	C\$20.50	C\$15.00	C\$13.00
48 ½-lb. flat ..	16.50	11.00	8.25	7.25
96 ¼-lb. flat ..	19.00	13.00	-	-

However, in some instances export prices for unadvertised brands of standard quality were selling for C\$3.00 less a case than the prices quoted in the table.

In 1951, the United Kingdom purchased 300,000 cases of salmon in British Columbia, costing approximately C\$6,700,000, but not a single case was sold in that market in 1952. Early in 1952 there was a heavy carryover of chum, coho, and pink salmon amounting to about 698,000 cases and a substantial quantity of the latter species were sold in the United States. The complexion of the marketing problem has now changed and the emphasis now is on the disposal of sockeye and pink salmon.



Costa Rica

GOVERNMENT TO DEVELOP SHRIMP FISHERY: The Costa Rican Government has licensed a California firm to fish for shrimp on the Pacific side of its coastal waters as part of its plan to develop a more significant shrimp fishery, reports a November 14

dispatch from the American Embassy at San Jose. This company's operations will be largely exploratory and it will report to the Costa Rican Government in detail its findings on tides, size and location of hauls, size of shrimp, etc.

The California firm will pay an export tax of US\$12.00 for each metric ton of shrimp caught and will be permitted to fish in Costa Rican Pacific territorial waters, with the exception of Nicoya and Dulce Gulfs.

The Costa Rican Government hopes to license more shrimpers under similar arrangements in the future.

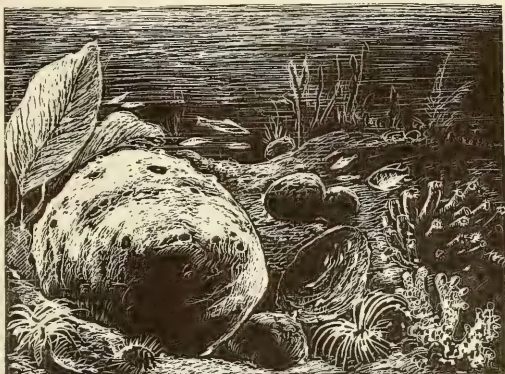


Cyrenaica

SPONGE CONCESSION GRANTED: Exclusive rights to fish for, take, and dispose of sponges in the territorial waters of Cyrenaica were granted by the Government of Cyrenaica to a Benghazi firm on May 14, 1952, according to reports. The contract came into force on May 1, 1952, and extends for a period of ten years.

The contract allows the hiring of foreign vessels with foreign crews until such time as the company-owned vessels with Cyrenaican crews are trained in sponge fishing. Payment for the hire of these vessels may be either in cash or a share of the sponges, at the option of the company.

Divers of foreign nationality may be employed in accordance with a plan agreed to by the Government. All foreign divers must have had no less than two years' experience as sponge divers.



SPONGES ON THE SEA BOTTOM.

The only sponge-fishing methods to be employed are: the diving system, the "tuffo" system, and the harpoon system. Dragging for sponges will not be permitted.

The company undertakes to train each year a number of Cyrenaicans (not less than 10 nor more than 25) as sponge fishermen and shall employ as many of these as have acquired the necessary skill and knowledge of sponge diving to replace foreign divers. In addition, the company undertakes to insure all divers in its employment against the risk of death, injury, or disease arising out of or in the course of their employment for such sums and with such insurance company as the Government may approve or with an insurance company recognized by the Government. Vessels licensed for the purpose of sponge fishing may operate in the territorial waters of Cyrenaica within an area bounded on the East by the meridian of longitude passing through Bardia and on the West by the meridian of longitude passing through El Agheila. Sponges are to be landed in prescribed areas at the ports of Benghazi, Derna, and Tobruk only, and declared for grading, weighing, and valuation. Sponges will be processed in Cyrenaica. The company is to pay the usual export duties on all sponges exported from Cyrenaica.

Ecuador

UNITED STATES-OWNED ECUADORAN FISHERY COMPANIES ENCOUNTER DIFFICULTIES: Two United States-owned Ecuadoran fishing companies encountered difficulties during the third quarter of 1952 because of alleged failure to fulfill their contracts with the Ecuadoran Government. In addition, some California vessels fishing off Ecuador were seized and fined, reports a November 10 dispatch from the American Embassy at Quito. It was reported that the two companies and some California vessels expanded their fishing operations in waters off Ecuador.

In general, the situation in the Ecuadoran fishing industry was chaotic and many difficulties arose, not only economic but also with respect to both Ecuadoran and international laws. If these problems can be solved satisfactorily, the fishing industry, especially tuna fishing, should grow rapidly and become an important factor in the Ecuadoran economy, according to reports.



Egypt

FISH EXPORTS PROHIBITED: Fish and industrial feedstuffs are included in a long list of products which cannot be exported from Egypt. A communique issued on November 17, 1952, by the Egyptian Ministry of Finance announced the enforcement of new regulations to govern Egyptian exports, a November 24 American Embassy dispatch from Cairo states.



Ethiopia

EXPORT DUTIES ON CERTAIN FISHERY PRODUCTS: An export duty of 5 percent ad valorem has been established by Ethiopia for certain fishery products. This duty was announced by Legal Notice 171, published in the Negarit Gazeta of September 26. The fishery products affected are: fish meal, fish livers and fins, and mother-of-pearl buttons or button blanks. These products were previously exportable free of duty.



French Morocco

FISHERY INDUSTRIES TAXED TO FINANCE RESEARCH AND MARKET DEVELOPMENT: Two new taxes on the "industrial" production of sardines, anchovies, mackerel, and tuna have been levied by the Protectorate Government of French Morocco in a decree of October 4.

The first tax is to be levied on fish destined to be canned or exported frozen. The proceeds will be applied to governmental scientific research on fishing and to the agency charged with the inspection of fresh fish. This tax is 0.60 francs per kilogram (about 7-3/4 U.S. cents per hundredweight) of edible fish caught, or 0.30 francs per kilogram (about 3-3/4 U.S. cents per hundredweight) of fish destined for the production of byproducts, the charges to be shared equally by the fishermen and the industry purchasing the catch.

The second tax is levied on fish delivered to the canneries. Tax proceeds will be given to the Federation of Fish Canners, which is charged with protecting the interests of the canners and with aiding them in developing foreign markets for their products. The tax is 0.20 francs per kilogram (about 2-1/2 U.S. cents per hundredweight) payable by the canners.

The imposition of these taxes at a time when the fishing industry of French Morocco is encountering export difficulties demonstrates the determination of the Protectorate Government to develop the activities of organizations devoted to scientific fishing research and the development of foreign markets for fresh and canned fish. This step was taken as a measure to aid in the rehabilitation of the industry, reports a November 20 American Consulate dispatch from Casablanca.



German Federal Republic

AMERICAN TRAWLERS RETURNED TO U. S. ARMY: The remaining 11 of 12 United States fishing trawlers furnished to the Federal Republic of Germany on a charter basis (under the authority of the Foreign Aid Appropriation Bill of 1949) were returned to Army control on December 5, 1952, the U. S. Fish and Wildlife Service was advised by the U. S. Department of State. It has been determined that the German fishing industry has reached a position whereby the further use of these trawlers was no longer required.



Iceland

FROZEN FISH PRODUCTION HIGH: Continued high demand for frozen fillets during the early months of 1952 resulted in the delivery of large quantities of fish to Icelandic freezing plants. Production of frozen fish during January-June 1952 rose 37 percent over the corresponding period of 1951, according to an October 24 American Embassy dispatch from Reykjavik. However, by the end of the second quarter of 1952 large unsold stocks of frozen fish packed for the European market had begun to accumulate, causing a great deal of concern as to their disposition. The manner in which they are packed makes their diversion to the United States market (in which demand held steady) impractical. Though considerable demand exists for frozen fish in Central and Eastern Europe, and Israel, trade with these countries has been hampered by difficulties. The principal hindrance was Iceland's disinclination to accept manufactured products from these countries in return so long as the



COD FILLETS PASSING THROUGH SKINNING MACHINE PREPARATORY TO QUICK FREEZING AT ICELANDIC PLANT.

Icelandic Government's trade liberalization policies made imports from the dollar area possible.

HERRING FISHERIES PROSPECTS POOR: About 140 vessels prepared to take part in the summer herring fishery off the North Coast. Unfavorable weather made the prospects poor, but hope was expressed that the introduction of floating trawls would improve the herring catch. This new gear enables the fishermen to trawl below the surface, and it is hoped that a combination of sonar-searching and sub-surface trawling might improve the chances for a good herring catch. However, this hope proved illusory this year, but may prove justified in the long run. Failure of the herring fisheries again this year would have serious repercussions upon the motorboat fleet and herring factories already heavily in debt. Many trawler owners were also in difficulty, being unable to meet their obligations and repay loans from the Fisheries Loan Department.

Although the herring fisheries were a failure last year, they still provided Iceland with about 100 million kroner (US\$6,127,000) in foreign exchange. This year the price of herring and herring oil slumped around 50 percent, making a much greater catch necessary if the foreign exchange earnings of the industry are merely to hold their own.

In 1952, the State herring factories were authorized to purchase herring for processing into oil at 60 kroner per mal (approximately 1½ U. S. cents per pound) as compared with 110.16 (2½ U. S. cents per pound) in 1951, 65 kroner (1-1/3 U. S. cents per pound) in 1950, and 40 kroner (3/4 U. S. cents per pound) in 1949.

MOTORBOAT FISHERY FLEET DENIED GREENLAND HARBOR FACILITIES: Iceland was anxious this spring to obtain the harbor facilities necessary to enable its motorboat fleet to engage in fishing in the grounds off Greenland. A representative was sent to Denmark to discuss this question, but no concessions could be obtained from Denmark, which still refuses Icelandic vessels anything but water and other internationally recognized harbor services. This makes it about impossible for the Icelandic motorboat fleet to operate in the grounds off the west coast of Greenland, but a few Icelandic trawlers did operate there during the second quarter of 1952.

* * * * *

TWO INVENTIONS OF INTEREST TO FISHERMEN: The Director of Fisheries in Iceland recently demonstrated two new Icelandic inventions of interest to fishermen, according to a report in Fiskets Gang, a Norwegian fishery periodical.

One invention is a machine which cuts up bait herring, one at a time. This device can be regulated to cut pieces of bait of any desired size.

The other invention is a machine which can be used in the line-trawl fishery to lay the line in coils in a half barrel as it is hauled in by the winch.

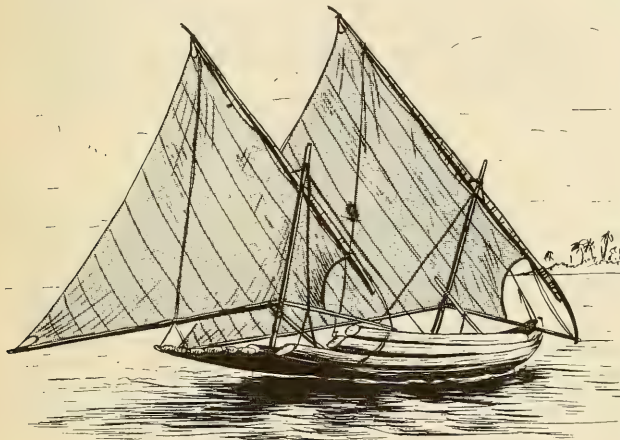
Patent applications are being made for both inventions in those countries where the devices would be useful.



India

SURVEY OF THE FISHERIES: Marine Fisheries: For the past few years the Central Marine Fisheries Research Station, Mandapam, South India, with survey centers located along the coastline of India, has been collecting statistics on the marine fisheries of India, in addition to its normal scientific activities. A 1948 census revealed that there are 1,264 marine-fishing villages with 74,241 indigenous boats of different types engaged in marine fishing, reports FAO's Indo Pacific Fisheries Council in its September 1952 Current Affairs Bulletin. The boats range from an ordinary raft of 3 logs lashed together and known as a "catamaran" to the very skillfully designed plank-built boat. There are more than 364,000 pieces of nets in use, ranging from the small cast net to a mile-long "rampani" net of the Ratnagiri Coast.

Since 1949, attention has been paid to estimating the total landings of marine fish in India by the sampling method. In 1951, total landings of marine fish by the indigenous boats and nets amounted to 521,438 long tons, as compared with 567,246 tons in 1950. The west coast of India contributed the major portion of the landings and accounted for about 82 percent of the total catch in 1951 and about 75 percent in 1950. There is a small number of mechanized vessels operating in Indian waters, but when compared with landings from indigenous craft the production is negligible.



TYPICAL CATAMARAN USED FOR FISHING IN INDIA.

species vary from year to year. The figures for 1950 and 1951 show that sardines, mackerel, and prawn form nearly half of the total catch. The average percentage yields of some of the important groups of fishes are: mackerel 18.20, sardines 16.58, prawn 14.18, anchovy and herring 11.38, jewfish 5.90, sharks and rays 4.43, silverbellies 3.31, ribbonfish 3.27, catfish 3.00, flatfish 2.89, perches 2.57, Bombay duck 1.98, carangids 1.51, pomfrets 1.33, seerfish 1.30, tuna 0.50, other fishes 7.67.

The distribution of some of the above groups of fishes is regional while others are available along the entire coast. Mackerel form 18 percent of the total catch and are mainly landed along the Malabar and Kanara coasts of Madras and Bombay States. Sardine, sharks, rays, and catfish occur throughout, but the

An analysis of the seasonal variation of the landings reveals that almost two-thirds of the landings occur from October to March. The heavy monsoons on the West Coast from June to August bring fishing activities almost to a standstill.

The average annual return per boat during the years 1950 and 1951 was 16,083 pounds, while the average annual return per active fisherman was 1,590 pounds. The percentage yields of different

oil sardine occur only on the West Coast. Prawn are especially abundant off Bombay and Cochin. Jewfish, though an all-India fishery, are caught heavily off Bombay coast. Bombay duck as a fishery is confined to the Bombay coast. Tuna are caught off Travancore and Tuticorin, although they have been reported at Ratnagiri and along Orissa and Andhra coasts.

The oil-sardine fishery has been showing a notable recovery during the past three years after a long period of decline which had caused much distress to the Malabar fishermen.

An advisor to the Norwegian Director of Fisheries has taken up a six months' assignment at Bombay in the FAO-ETAP. He will be engaged in making an appraisal of the operations undertaken by the Indian Pilot Deep-Sea Fishing Station and assessing future possibilities. He will soon be joined in west Bengal by a Netherlands fishery engineer who will work for one year with special reference to capture methods in fresh and brackish water and inland fish distribution.

Inland Fisheries: CARP CULTURE: Survey work for locating river spawning areas of quick-growing carp like Labeo rohita, Cirrhina mrigala, Catla catla, and Labeo calbasu, which do not as a rule breed in confined waters, has been taken up systematically since 1945. It has now been possible to establish 50 spawn-collecting and rearing centers. Lack of knowledge on the proper catching methods and feeding habits of fry is responsible for mortality in nurseries as high as 97 percent. Results of investigations carried out by the Central Inland Fisheries Research Station in the laboratory and in the field have now generally been applied to the nursery centers in the State. As a result of this, the survival rate has been raised to 50 percent.



Indonesia

ECA "MAJANG" FISHING VESSELS: The Economic Cooperation Administration (now the Mutual Security Administration) had supplied the Indonesian fisheries as of November 1952 a total of 57 motorized "majang" fishing vessels and 60 Diesel engines for installation in locally-built vessels, according to a December 1 dispatch from the American Embassy at Djakarta. Fishermen operating the vessels claim they are very satisfactory because of their speed and stability. Some difficulties have been experienced with training crews to operate them and the selection of fishing areas. However, these problems are reported to be straightened out and future operation of these vessels should be more productive.



Italy

CONSTRUCTION OF WHALING FACTORYSHIP SUSPENDED: Construction of the 22,500-ton Italian whaling factoryship Trinacria has been suspended due to the drop in whale-oil prices and the opposition of Italian butter and olive oil producers, according to a recent Trieste press report. It is now believed that the ship will not be completed and that the hull may be turned into a tanker, according to the October 1952 Fisheries Newsletter of the Australian Commonwealth Director of Fisheries.

The Palermo, Sicily, firm, owners of the Trinacria, had obtained a 9-billion lire (US\$14,500,000) subsidy from the Italian Government for the building of this ship and 12 other ships of 1,000 tons each to be used in Antarctic whaling.

NOTE: ALSO SEE COMMERCIAL FISHERIES REVIEW, OCTOBER 1952, P. 65.



Japan

LATEST CHECK PRICES FOR TUNA EXPORTS TO U. S. AND CANADA: The latest Japanese check prices (floor prices) on tuna exported to the United States and Canada were released recently by the Ministry of International Trade and Industry (table 1), reports a November 17 American Embassy dispatch from Tokyo. The prices are:

Table 1 - Japanese Check Prices For Tuna Exports to U. S. and Canada

Product	Frozen		Canned in Oil		Canned in Brine	
	Form	Price per short ton	Grade	Price per case/	Grade	Price per case/
		US\$		US\$		US\$
Albacore	whole	300	white-meat fancy, A2/	8.80	white-meat fancy, A	8.50
Yellowfin ...	whole and fillets	240	light-meat fancy, A	7.90	light-meat fancy, A	7.60
Skipjack	whole	180	light-meat fancy, A	7.90	light-meat fancy, A	7.60

1/ CASE CONSISTS OF 48 7-OZ. CANS.

2/ ALSO WHITE MEAT FANCY B GRADE AT US\$8.10 PER CASE.

In addition, on October 24, the Canned Tuna Check Price Administration Committee established check prices on Grade B canned tuna in brine (table 2), according to a Japanese press report (Suisan Tsushin, October 25).

Table 2 - Japanese Check Prices on Grade B Canned Tuna in Brine Exported to U. S. and Canada

Case Size	Price Per Case
	US\$
48 7-oz. cans	8.00
48 13-oz. cans	14.00
48 3½-oz. cans	4.75
24 2-kg. cans	16.00

A group representing the canning industry recommended that Grade B tuna in brine not be shipped to North and South America, Hong Kong, Singapore, and Okinawa.

The Canned Tuna Check Price Administration Committee is composed of representatives of the two governmental units concerned with the production and export of fisheries products, namely, the Fisheries Agency of the Ministry of Agriculture and Forestry and the Agricultural and Aquatic Products Section of the Trade Promotion Bureau, Ministry of International Trade and Industry. This Committee meets monthly in consultation with the industry to determine whether changes in check prices on exports of tuna are advisable in view of prevailing production and marketing conditions.

FROZEN TUNA EXPORTS TO U. S. AND CANADA: Data on Japanese tuna exports to the United States and Canada on a monthly basis were recently released by the Japanese Ministry of International Trade and Industry (see table):

Japanese Approved Exports of Frozen Tuna to United States and Canada by Months, January-October 1952

Japanese Imports of Fish and Fish Products														
1952	ALBACORE/				SKIPJACK				YELLOWFIN/				TOTAL	
	United States		Canada		United States		United States							
	Quantity	Avg. Price/Short Ton	Quantity	Avg. Price/Short Ton	Quantity	Avg. Price/Short Ton	Quantity	Avg. Price/Short Ton	Quantity	Avg. Price/Short Ton	Quantity	F.O.B. Value		
	Short Tons	US\$	Short Tons	US\$	Short Tons	US\$	Short Tons	US\$	Short Tons	US\$	Short Tons	US\$		
Jan. ...	2,180	263	35	295	-	-	-	-	661	204	2,896	722,907		
Feb. ...	1,021	286	-	-	-	-	-	-	340	197	1,361	359,000		
Mar. ...	2,188	325	-	-	20	200	-	-	-	-	2,208	715,194		
Apr. ...	1,079	332	-	-	21	220	-	-	-	-	1,100	362,884		
May ...	1,231	331	-	-	70	212	-	-	-	-	1,301	422,871		
June ...	6,590	302	300	300	-	-	-	-	2,286 ^{3/}	-	6,890	2,079,277		
July ...	2,703	301	1,103	301	-	-	-	-	-	-	3,806	1,146,470		
Aug. ...	340	306	1,355	311	-	-	-	-	-	-	1,695	524,925		
Sept. ...	-	-	75	300	1	260	-	-	-	-	76	25,760		
Oct. ...	1,438	301	-	-	470	210	-	-	-	-	4,193 ^{3/}	1,054,474		
Total	18,770	-	2,868	-	582	-	-	-	3,507	-	25,527	7,410,762		

1/ WHOLE AND LOINS.

2/ WHOLE (HEADLESS AND GUTTED) AND FILLETS.

3/ THIS ENTIRE QUANTITY INCLUDED IN OCTOBER MONTHLY TOTAL.

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FACTORYSHIP CRAB FISHING IN BERING SEA PLANNED FOR 1953: The first Japanese factoryship crab-fishing operation in the Bering Sea since World War II is being tentatively planned for 1953, according to a recent announcement by the Japanese Fisheries Agency published by the Japanese Press (Kyodo, November 12).

The Japanese Government's plans are still indefinite on details of the expedition, reports a November 24 dispatch from the American Embassy in Tokyo. It has been agreed, however, that there will be only one factoryship. Its size, the number of catcher boats, and the catch target will be decided after a study is made of information on United States crab fishing in the East Bering Sea during the last several years. This survey will be related to the total catch which should be taken on the basis of the present known facts of crab resources and the extent of United States fishing operations. Estimates for the 1953 catch will include consideration of prewar Japanese fishing.

In 1933, two Japanese factoryships produced 50,000 cases of canned crab meat. A case consisted of 96 8-oz. cans, or double the contents of a present-day case. Hence the 1933 Japanese catch was equivalent to about 100,000 cases at current estimates. There were no large United States fishing operations for crabs in waters off Alaska in 1933.

Officials of the Japanese Fisheries Agency strongly favor a scientific study of the crab resources of the Bering Sea. They hope that such a survey will be sponsored by the International Commission which will be established in accordance with the North Pacific Tripartite Fisheries Treaty.

The Japanese crab-fishing expedition is expected to depart in late April 1953. Its area of operation will be in the East Bering Sea. Current production of Japanese crab is limited to the inshore waters off Hokkaido, large island in northwestern Japan. Output in 1951 consisted of 192,871 actual cases, as follows:

Type of Can	No. cans per case	Cases
No. 2, 6½ oz. each..	48	192,039
No. 2, 6½ oz. each..	96	632
No. 3, 3¼ oz. each..	48	200
Total		192,871

Domestic consumption accounted for 46.5 percent of the pack and exports, 53.5 percent. The United States received 91 percent of the crab meat exports, with Hawaii 3 percent, European countries 3 percent, and other countries (including the Far East) 3 percent.

Export prices (f.o.b.) in 1951 ranged from a monthly average of \$22.50 per case (fancy grade, 48 6½-oz. cans) in February to \$26.24 in December. The prevailing price for the same quality is quoted at \$26.00 per case.

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EXPERIMENTAL PURSE-SEINING FOR TUNA IN CELEBES SEA: One of the largest companies in the Japanese fishing industry has notified the Japanese Fisheries Agency of its plan to engage in experimental purse-seining for tuna and skipjack in the Celebes Sea. This report was published in the Japanese press (Suisan Tsushin, October 25). The Japanese fishing boat Kosei Maru (190 gross tons) will operate like an American purse-seiner would. A net constructed of amylon (synthetic fiber) will be used. The total Japanese fishing fleet includes 18 boats of this type, ordinarily used in the highly competitive fisheries for skipjack and mackerel in the coastal waters of Japan. The experiment will be watched with interest by operators of this type of craft to determine whether the American-type purse-seine vessel will produce profitable catches in these distant fishing grounds. The Kosei Maru sailed from Japan on November 30 and was expected to return by the end of December, declares an American Embassy dispatch from Tokyo dated December 17.

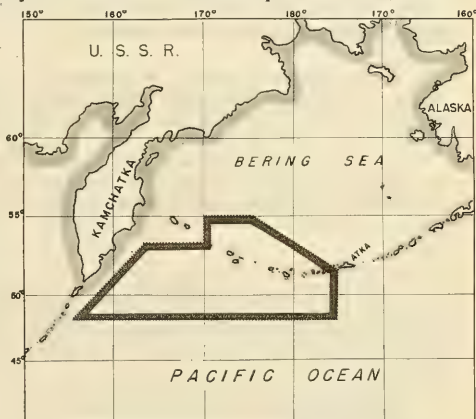
Recent Japanese fishing in the Celebes Sea was by a tuna mothership expedition using long lines. This fleet consisted of one mothership (2,940 gross tons) and 10 catcher boats. The catch totaled 2,005 metric tons, including 988 tons of yellowfin and 247 tons of other tuna. The remainder of the catch was composed chiefly of shark and swordfish. The fleet operated from June 17 to September 2, 1952.

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MOTHERSHIP-TYPE SALMON FISHING IN NORTH PACIFIC PLANNED FOR 1953: A plan for Japanese mothership-type salmon fishing in the North Pacific in 1953 was announced by the Japanese Fisheries Agency in November. These operations will be similar in some respects to the 1952 operations, according to a November 21 dispatch from the American Embassy in Tokyo. The fleets are expected to sail in May 1953.

No decision has been reached on the number of motherships that will operate. The expedition will include a total of 85 catcher boats and 15 research vessels. In contrast to the joint arrangement in 1952, each fleet in 1953 will be headed by a mothership and will be operated independently by a Japanese firm. Operations will be in accordance with Japanese Government regulations.

To qualify as motherships, vessels must (1) exceed 1,000 gross tons; (2) have a freezing capacity of 10 tons per 24 hours; (3) be fully equipped with wireless, radar, direction finders, and similar apparatus; and (4) have machine-shop facilities for repairs to catcher boats. Catcher boats must (1) exceed 50 gross tons; (2) have proper wireless and radio equipment; and (3) have Diesel power and be capable of a speed of 7 knots.



APPROXIMATE AREA (AREA ENCLOSED WITH DIAGONAL-LINED STIPPLING) OF OPERATIONS FOR PLANNED 1953 JAPANESE MOTHERSHIP-TYPE SALMON FISHING IN THE NORTH PACIFIC.

The region to be fished will be in accordance with provisions of the Tripartite Fisheries Agreement (Canada-Japan-United States). The Japanese Government will instruct the motherships to confine their salmon activities to the following area in the North Pacific:

Beginning at 55°00' N. latitude, 175°00' W. longitude, south to the territorial waters limit of Atka Island, resuming at the western extremity of the territorial water limits of Atka Island and running due south to 48°00' N. latitude, west to 48°00' N. latitude, 156°00' E. longitude, northeasterly to 53°30' N. latitude, 163°00' E. longitude, east to 53°30' N. latitude, 170°00' E. longitude, north to 55°00' N. latitude, 170°00' E. longitude, and east to the beginning point at 55°00' N. latitude and 175°00' W. longitude. This area extends approximately from Atka Island in the Aleutians westward toward Kamchatka and the Northern Kuriles.

The Japanese fishing industry is showing keen interest in participating in these operations. According to a recent press item (Kyodo, December 4), applications have already been filed with the Japanese Fisheries Agency for authorization to participate in such fishing during the next season to begin in May 1953. Applicants include the three major firms which engaged in the 1952 expedition. The applications to date total 6 motherships ranging from 1,100 to 4,700 gross tons each, 195 catcher boats, and 35 research boats. The Japanese Fisheries Agency has not announced a decision on the number of applicants to be authorized or the number of motherships to be permitted.

NOTE: ALSO SEE COMMERCIAL FISHERIES REVIEW, NOVEMBER 1952, P. 40.

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RESULTS OF 1952 NORTH PACIFIC SALMON EXPEDITION: The 1952 Japanese North Pacific salmon expedition produced a total catch of 2,100,000 salmon with a total weight of about 6,800,000 pounds, compared with the catch target of 1,800,000 fish, report recent dispatches from the American Embassy in Tokyo. Of the total catch, 209,000 pounds went for canning and the balance (6,600,000 pounds) placed in storage, mostly as salted and the remainder as frozen fresh. Most of this stock was earmarked for domestic consumption, especially during the New Year holiday season.

Of the amount canned, approximately 2,000 cases have been exported--1,000 cases to Ireland, 500 cases to Belgium, and an additional 500 cases to Belgium and Holland. There has been no export of fresh and salted salmon.

The 1952 salmon expedition consisted of 3 motherships (one of 3,600 gross tons, and two of 500 gross tons), 50 catcher boats, 2 inspection vessels, and 2 research vessels. Operations extended from about May 10 to August 6.

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GOVERNMENT AID TO COMMERCIAL FISHERIES: During fiscal year 1952 the Japanese Government granted considerable aid (direct and indirect) to commercial fisheries of Japan in the form of subsidies, loans, tax exemptions, and appropriations for research, reports a November 14 dispatch from the American Embassy in Tokyo.

Subsidies: The following subsidies do not include aid from prefectural governments. Most of the subsidies listed below are for fisheries operators in the inland, coastal, and offshore waters. Tuna fisheries operators are not included as they are not interested in this type of aid. Direct subsidies totaled 633,791,000 yen (about US\$1,760,000).

Item	Amount in 1,000 Yen	Particulars
1. Experiments on utilization of marine products	30,000	Studies or experiments on utilization of seaweeds, fish meal, fishing gear of synthetic fiber, etc.
2. Reduction and readjustment of small-type trawlers ..	322,510	Compensation for compulsory reduction of small-type trawlers.
3. Improvement of inland-water resources	42,026	Seed fish transplantation in inland waters.
4. Conservation of marine resources in shallow seas ..	12,800	Promotion of the growth of shallow seas resources (algae, etc.).
5. Development of marine resources propagations	67,974	Development of unexploited fishing grounds in shallow waters.
6. Increased production of pearl oysters	5,875	Increase production of pearl oysters.
7. Training of staffs and officials of fisheries cooperatives	2,715	Lectures and training for democratic management and accounting of fisheries cooperatives.
8. Training of crew members of fishing boats	10,310	Democratic and effective education for fishing crew members.
9. Establishment of small-type land radio stations for fishing use	6,760	Increased establishment of radio land stations of small type for fishing use.
10. Administrative expenses of fishing boat insurance associations.	21,953	National share in the expenses to enforce the Fishing Boat Damage Compensation Law.
11. Reconstruction and rehabilitation of fishermen's cooperatives	110,868	Aid for reconstruction and rehabilitation of depressed fishermen's cooperatives.
Total	633,791	
1/ ¥360 = US\$1.00		

Loans for Vessel Construction: A loan of 300 million yen (US\$833,000) was recently favored by the Bank of Development (Kaihatsu Ginko) for the construction of 10 tuna vessels over 200 tons.

Tax Exemptions: No exemptions are made in regard to the National Tax. But in the Local Tax, warehouses and offices of fisheries cooperatives are exempted from the fixed assets tax. The tuna fishery has scarcely any exemption under this category.

Emergency and Disaster Relief: This type of aid totaled 1,402,692,000 yen (US\$3,900,000). The amount of benefits obtainable by tuna fisheries operators under this type of aid is very small.

Item	Amount in 1,000 Yen	Particulars
1. Subsidy for interests of restoration loan for fisheries damages	30,000	For interests of loan for the restoration of fisheries damages caused by the typhoons in October 1951.
2. Subsidy for expenses of counter-measure works for changed foundation of fishing ports, etc.	33,500	For the restoration of fishing ports, etc., damaged by changed foundations caused by earthquakes in Nankai district, etc., in 1944 and 1947.
3. Subsidy for expenses of restoration works for fishing ports	1,339,192	For the restoration of fishing ports damaged by storms and floods in the period from 1948 to 1951.
Total	1,402,692	

Loans or Grants for Harbor Improvements:

Loans ¥440,000,000 (US\$1,222,000).
 Grants ¥1,841,100,000 (US\$5,115,000).

Administrative Costs: Costs for the administration of fisheries regulations, supervision, and guidance totaled 485,378,000 yen (US\$1,350,000).

Item	Amount in 1,000 Yen
1. Regulation expenses for small trawler fisheries	29,136
2. Regulation and guidance-adjustment expenses for off-shore fisheries	112,544
3. Regulation and guidance-supervision expenses for high-seas fisheries/	343,698
Total	485,378
1/ THE AMOUNT FOR TUNA FISHERIES REGULATIONS, GUIDANCE, AND SUPERVISION OCCUPIES ONLY A SMALL PART OF THIS ITEM.	

Assistance Rendered Through Research: BIOLOGICAL AND OCEANOGRAPHIC STUDIES: Appropriation: ¥262,000,000 (US\$730,000)--¥15,000,000 is appropriated for biological studies of tuna and tuna-like fishes. Number of experimental stations: 28 (3 of them carry on studies of tuna, principally of tuna and skipjack resources, etc.). Number of research vessels: 14 (4 of them are mainly used for tuna research, principally of tuna and skipjack resources, etc.).

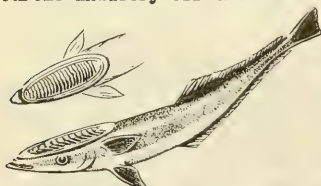
TECHNOLOGICAL STUDIES: Appropriation not available. Number of laboratories: 15 prefectural laboratories with 15 vessels engaged in research on tuna, skipjack, and saury pike fisheries.

MARKETING AND OTHER ECONOMIC STUDIES: Appropriations of ¥44,414,000 (US\$123,000). Types of studies: (1) survey on economical activities in fishing industry and their effects on the national economy; (2) rational adjustment of fishing techniques; (3) improvement of fish marketing; (4) rationalization of fishing industry; (5) administration of inland waters; (6) overseas fisheries information.



Kenya

TURTLE INDUSTRY PLANNED: The possibilities of establishing a large-scale turtle industry off the Lamu Archipelago and the Bajun Coast on the borders of Kenya and Somalia (Africa) are being explored by a Mombasa vessel owner, the October 1952 South African Shipping News and Fishing Industry Review states. It is reported that the turtles will be exported to the United States since importers in that country have shown considerable interest in the possibility of obtaining turtles from Kenya. This proposed project is the outcome of a report concerning turtle fishing in the Bajun Islands issued recently by the Fisheries Department of the Kenya Government.



REMORA (LEPTECHENEIS NAUCRATES) BELIEVED TO BE SIMILAR TO THE FISH USED BY KENYA FISHERMEN TO HUNT TURTLES.

The plan calls for establishing a "turtle park" in a suitable bay frequented by turtles. This "park" would be fenced off to provide a natural sanctuary where turtles can live and feed without danger, and assuring a steady supply of turtles.

It is hoped that the turtles will breed in such a sanctuary so that the industry would be a long-term one. It takes about five years for turtles to mature to marketable size.

The turtles will be caught by specially-designed harpoons which will penetrate the shell but will not kill. Hunting will take place at night when lanterns will be used to attract the turtles.

A further supply of turtles will be obtained from the Bajun natives who use a most unique method to catch turtles. Live suckerrfish, abundant near the sandy beaches of the Bajun Islands, are "allowed" to cling to the side of a canoe. When the turtles are sighted, a strong line is affixed to a suckerrfish and the fish is then thrown towards the turtles. With its sucker the fish attaches itself to the turtle. The fishermen then "play" the turtle with the suckerrfish acting as a hook. So strong is the suction these fish exert that rarely do fish and turtle part. This method of catching turtles is a carefully guarded tribal secret and the Bajun natives will not allow any outsiders to learn the art.

Present plans are to make monthly trips to the Archipelago to collect about 200 to 300 turtles a trip. The meat will be exported to the United States and Britain. From the balance, oil will be extracted for use in cosmetics.



Lebanon

A REPORT ON THE FISHERIES: Fishery production from local Lebanese waters depends largely on migratory species. Catch per fisherman is so small and the competition so keen that fishermen will use any means to catch fish, including explosives. The use of explosives has depleted stocks so low that national attention is being focused on this method of fishing.

Sardine Fishery: Sardines are reported to be present in Lebanese waters the year-round, but are landed in abundance only from May through September. The general pattern of occurrence of these fish is believed to be a northward spring migration, building up in intensity during the summer months, and tapering off during the fall and winter.

Sardines comprise 25 to 30 percent of the annual fisheries production. During a regular "shabak luse" season (extending from June through September), approximately 200,000 kg. (440,000 pounds) of sardines are caught.

Sardines occur in small numbers in April and May and again in the fall in the beach-seine fishery, but this is of little importance as a measure of abundance. A large mesh net is employed, and fishing is done in the daytime.

The chief method of capture for sardines is an adaptation of the lampara method ("shabak luse," or "light fishing with net"). The Arabic name of this fishing method refers to the fact that in its most effective operation it depends upon attracting fish at night through the use of lights. These lights are pressure-type petroleum oil lamps suspended downward, either singly or in pairs, from a frame on a bow of a small skiff, at a height of 1 to 1½ meters (3 to 5 feet) above the surface. These skiffs, usually operated by one man, are rowed to location just before sunset where they are anchored with lights on. These locations are usually within 1½ kilometers (1 mile) from shore in a depth of about 30 meters (98 feet). Later in the evening, a larger skiff carrying the net and 3 to 6 men

proceeds to the location, usually securing to an anchor buoy previously set near the location. This buoy and anchor are actually components of the gear unit. On the judgment of the man in the skiff with the light that a reasonable number of fish have collected under the light, the net is cast (usually in a clockwise loop) around the smaller skiff which serves as a guide point for the set. Before the start of this setting operation, the anchored line is hauled in short and transferred from its normal attachment to the net skiff over to the "first-end" of the net itself, thereby providing for the necessary drag which with the forward movement of the net skiff will cause the net to unfold out into the water. This attachment to the anchor buoy simplified picking up the "first-end" again when the skiff completes its loop to the starting point. The "last-end" of the net is equipped with a running line, paid out from the skiff until the "first-end" can be retrieved. In the hauling operation which follows, the two ends of the net are brought together by hauling in the running line, which for this purpose is now a towline. Having brought these two ends or wings together and lifting the lead lines, both wing ends are hauled aboard the skiff's starboard side. In the meantime, the anchor line has been shifted from the "first-end" of the seine, back to the skiff, passing around a row pin on the port gunwale which now serves as a snubbing pin. As the two ends of the net are brought aboard, the lead lines tend to come together, closing the net at the bottom. This rather sharp closing action of the lead line is a result of both the normal drag of the net and an opposite drag on the skiff accomplished by paying out the anchor line slowly, under tension, around the snubbing pin. As the hauling process continues, the "light" skiff is worked over the cork line to a position outside of the circle. This enables the man there to give added support to the cork line and to assist in emptying the net at the completion of the haul.

The net used is more or less a conventional two-wing and bag structure floated by a cork line and weighted down by a lead line. The wings start with approximately 50-mm. (2-inch) knot-to-knot mesh. This mesh size is successively reduced as the wings approach their attachment to the large bag of the net. This main net section is made chiefly of 18-to 20-mm. (3/4-inch) mesh. In actual local practice (though illegal) the center of the main net is supplied with a final bag with a 7-mm. (1/4-inch) mesh. After the balance of the net has been hauled aboard, this final bag holds the catch until it can be removed. This lifting may first be done with a dip net and later by bringing aboard both net and catch as a "blanket." After completing the haul, the net is overhauled to place the ends in proper order for a new set. As many as five sets per night may be made. Average weekly production is said to be approximately 200 kg. (440 pounds). The catch will, of course, vary according to the dark- and light-phases of the moon.

The length of the entire net may vary with the number of men in the fishing group, but a typical net would be 75 meters (246 feet) long at the cork line, and are reported to cost up to L43,000 (US\$900).

In addition to sardines, which dominate the catch of "shabak luse," anchovies, scup (porgy), and mackerel as well as immature forms of bonito occur.

The consumption of these sardines is almost entirely restricted to the fresh form, fried in olive oil. However, some salting on a family scale does take place. The general problem of disposal of the catch is little different from that of other species. Demand for fresh fish exceeds supply and preservation is not yet required. Canned sardines are imported into Lebanon.

Tuna and Tuna-Like Fish: Tuna and tuna-like fish are known to inhabit Lebanese waters, but there are no assembled data as to their occurrence, habits, species, abundance, or the contribution they make to the total fisheries production.

Tuna-like fish are only occasionally observed in the markets and in the small recreational fishery of Beirut.

One observer reported that for a 3-week period in August 1952 particularly large aggregations of tuna-like fish were seen in the outer Beirut harbor during the evenings and about two miles westward during the mornings. This occurrence of tuna is reported as common during the summer months, but they are not fished commercially. Tuna appear in the catch only incidentally. Since it is a dark-meat tuna, it is not liked by the Lebanese.

Marketing: The fish markets of Beirut offer both locally-caught and imported fish. However, the handling of the latter does not typify local marketing and transportation patterns.

In general, fish are received at fishing squares in boxes or baskets directly from the fisherman who usually remains on the spot to watch the sale and collect his money. At these squares, proprietors auction the fish either in bulk, by individual species, or in lots of usually 3 kg. ($6\frac{1}{2}$ pounds) each. In extreme cases the amount offered may actually be only a handful. The fisherman receives the auction price in cash less 5 percent commission. In the event that no bids are made or if the proprietor desires to purchase for later retail sale, he may agree with the fisherman on an acceptable lot price.

Another method of disposal is by direct sale from the fisherman to the consumer, usually by peddling. Still another form of marketing is the peddler who regularly handles fish from individual fishermen or fishing groups.

There are no well-defined patterns for delivering fish to market or to the peddlers with whom a regular sales arrangement has been established. In the larger ports, such as Tyre, Sidon, and Tripoli, fishermen bring their catch directly from their boats to the fishing squares where they are bought and selected largely for distribution in Beirut. In Beirut, this intermediate step is eliminated. For those fishermen who are scattered along the coast, each must devise his own delivery method. The pattern here is to carry the catch to the highway and hail a passing taxi, truck, or bus on its way to town. In such cases the fisherman is obliged to accompany his catch to the point of sale and later seek transportation back home. This may mean that the time spent on the disposal of the catch is equal to the time spent in making the catch. This method probably stems from the fisherman's desire to see his fare disposed of and the need to receive his money on the spot.

The transportation of fish in iced boxes by truck and also by taxi, from the larger towns to Beirut, is a typical method of transport.

The typical shop where fish is sold to the consumer is open to the street with fish segregated by species and displayed on concrete or marbleized counters. Other fish are set in boxes or baskets on the floor. Frequent applications of water on the fish reduce drying and preserve an appearance of freshness. In some instances ice is used in the display. No covered or screened display cases are used. Where larger volumes of fish are handled, particularly if they consist of imported fish, these are stored in ice chests until needed. In most cases the fish offered for sale are small, but in the larger shops it is possible to buy cuts or sections of large fish. Other than this, the dressing of fish is not practiced.

In addition to those fish which are peddled house to house the same day they are caught, day-old fish are sold out in the open at street stands which may be only upturned packing boxes. Under these circumstances, the fish may be completely exposed to the elements or may be sheltered by an umbrella. It is usually only the very poor who will buy fish handled under such conditions.

Shrimp, lobster, red mullet, and sole in that general order command very high prices. Next are the bream and perch-like fishes. Bonito, sardines, dogfish, and mackerel are the lower-priced varieties.

The high average temperature which characterizes Eastern Mediterranean countries is always a factor to be considered in the handling of fish. However, the problem of transporting fish in Lebanon is not particularly one of distances. Nearly every population center where fish could be marketed lies within two hours travel time from the several fishing ports. Beirut, which itself is on the coast, lies midway between the fishing centers of Tripoli on the north and Tyre on the south.

Retail Prices: Typical retail fish prices in Beirut during July 1952 are shown in the table.

Retail Fish Prices in Beirut, July 1952			
Species	Price Per Pound	Species	Price Per Pound
	US\$		US\$
Red Mullet ("Pandora")	1.23	Sole	1.07
Red Surmullet	.50	Dogfish	.16
Sea Bream	.62	Bonito	.15
Sea Perch	.71	Common shrimp .	1.38
Sardine (fresh)	.24		

It is apparent that these prices are in no way a reflection of the relative food values of the several species listed. These prices are regarded as being partly an expression of cultural preference.

Consumer Preferences: Lebanese taste is restricted to fried or baked fish. Boiled (or steamed) fish is almost unheard of. Imported canned tuna is well received in Lebanon, but it is not recognized as fish processed from tuna similar to that caught locally. There is a preference for small fish.



Mexico

GUAYMAS SHRIMP FISHERY OUTLOOK DARK: Approximately 400 metric tons of shrimp were landed at Guaymas in October 1952 (the first month of the current shrimp-fishing season). This is just about one-half the production in October 1951 and considerably below the most pessimistic predictions. The average catch per boat this year was only about two metric tons each as compared with three tons in October 1951. Unlike last year, fishing was poor this year, even the first few days of the season. Most shrimp caught were small and the relatively few tons of the large premium size landed were mixed with the smaller shrimp.

Freezing plants paid about 5½ pesos per kilo (29 U. S. cents per pound) in October as compared with 8 pesos per kilo (42 U. S. cents per pound) in October 1951.

Shrimp landings at Guaymas during November 1952 were estimated at less than the 400 metric tons landed in October, and not more than one-half the 775 metric tons landed in November 1951. The average catch per vessel in November was approximately 1½ metric tons; and the shrimp caught was of mixed sizes with only a small proportion of the large (26-30 count) size.

Two of the seven shrimp-freezing plants at Guaymas failed to open for the 1952/53 season because of financial difficulties brought about by too rapid expansion and the steady decline of the industry generally. Boat owners and freezing-plant owners are seriously upset over their future prospects at Guaymas. No government loan was granted them this year, and most are heavily in debt to supply houses and financial institutions. It is feared that the smaller operators and boat owners have little chance of completing the season unless conditions improve. Credit has been uniformly denied shrimp dealers, and collections are down to a bare trickle by comparison with those of the late 1940's when the shrimp "boom" was in full swing at Guaymas.

During October some vessels searched for productive beds as far south as Mazatlan and others north to the Gulf of California with little success. Most vessels are currently confining their efforts to waters in the immediate area to conserve fuel and provisions.

Shrimp fishermen blame the scarcity of shrimp and their financial straits upon a number of factors. However, two factors stand out: (1) the reported pre-season operations of canoe fishermen (approximately 3,000 in number) with throw nets in the bays where the shrimp spawn and grow; and (2) the refusal of the Government to further lower export taxes totaling nearly 1,000 pesos (US\$116) per metric ton. The second complaint has been aggravated by the levying of an additional 50 pesos (US\$5.80) per ton "vigilance tax" to defray expenses of the Mexican Navy for patrolling the spawning grounds.

Most responsible shrimp operators feel that no preseason concessions should be made to the myriad canoe fishermen, and that the Navy patrol should be an honest and efficient one, which they state has not always been the case. Further, they see no reason why the Government cannot absorb the "vigilance tax" within the export levy, in view of present circumstances. It would seem the need is not for additional loans but for a retrenchment to fit operations for a reduced scale of production. Prominent Guaymas shrimp men are reported to be planning a trip to Mexico City to voice their complaints before the Government.

A protective move that has been applauded locally is the announcement that no additional boats will be licensed to enter the industry, at least on the West Coast.

Guaymas newspapers have begun to carry editorials pointing out the necessity of basing the local economy on activities other than shrimping if the town is to survive, according to American consular dispatches from Guaymas dated November 6 and December 5.

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MAZATLAN SHRIMP FISHERY, NOVEMBER 1952: Shrimp exports from Mazatlan in November were almost double those for the month of October, but Mazatlan freezing-plant owners did not feel that the increase was an improvement, according to a December 6 American consular dispatch from Mazatlan. They felt that the resetting of the Escuinapa weirs and heavy shrimp fishing in the Bays of Altata and Topolobampo have prevented this season's shrimp from moving into the ocean.

The weirs in Escuinapa during October caught more shrimp than could be handled by the local cannery and some of their catch went to waste. However, the opening of these weirs would arouse the opposition of several hundred Escuinapa fishermen who would be left without means of livelihood. It is reported that the monthly output of the fishing firm that has the concession in the Bays of Topolobampo and Altata is as much as that of the four Mazatlan freezing plants put together.

A committee is scheduled to leave for Mexico City to discuss the problem with the Secretario de Marina.

The Mazatlan freezing plants in November 1952 exported to the United States 24 cars (1,222,614 pounds) of shrimp as compared to 13 cars (705,050 pounds) in October and 25 cars in November 1951.

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IMPORT DUTIES INCREASED FOR CERTAIN FISHERY PRODUCTS: Some higher import duties for certain fishery products were announced by the Mexican Government in a decree published in the Diario Oficial. The changes became effective October 13.

The modifications of the Mexican import tariff affecting fishery products are (shown are tariff fraction number; item description; specific duty in pesos per gross kilogram; ad-valorem duty; new and former rates):

Mexican Import Tariff Schedule	P r o d u c t s	New Duties		Former Duties	
		Specific Plus Ad Valorem			
		Pesos/ Gross Kg.	Percent	Pesos/ Gross Kg.	Percent
1.21.04	Codfish, dried, salted, or smoked, in any container.	0.80	+ 30	0.30	+ 30
1.21.09	Fish, salted, smoked, pressed, or preserved, not specified	1.00	+ 40	0.80	+ 35
1.21.10	Crustaceans and molluscs, dried, salted, or pre- served, all kinds	1.00	+ 35	0.80	+ 35

NOTE: ONE MEXICAN PESO EQUALS ABOUT 11.5 U.S. CENTS.

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SPINY LOBSTER AND CURED FISH EXPORT TARIFF FRACTIONS CHANGED: Mexico has changed the number of the export tariff fraction for dried, salted, or smoked fish from 11-10 to 11-02, and the number of the cooked, fresh, or chilled (spiny) lobster from 11-02 to 11-10, effective November 11. The duties remain unchanged. This change was announced in the Diario Oficial of November 7, 1952.



Norway

WOLFFISH FISHERY INCREASING IN IMPORTANCE (Correction of news item titled "Lumpfish Fishery Increasing in Importance"): In the October 1952 (Vol. 14, No. 10) issue of this Review, page 73, appeared the news item "Lumpfish Fishery Increasing in Importance." Due to an error in translating the Norwegian word "steinbit" to "lumpfish," the news item referred to lumpfish when it should have referred to wolffish. The Universitetets Biologiske Laboratorium og Statens Institutt for Hvalforskning, Oslo, Norway, called to our attention that "steinbit" refers to two species of wolffish (catfish)--Anarrhichas minor and A. latifrons. The lumpfish (Cyclopterus lumpus), called "stenbider" in Denmark and in some places in southern Norway and officially known in Norway as "rognkjeks," has no economic importance at the present time. Therefore, actually all references to lumpfish in the news item published in the October 1952 issue of the Review should be interpreted to refer to the wolffish (catfish).

The Norwegian frozen fish industry has developed the wolffish from an almost unknown species to a fairly important one. Both in quality and appearance wolff-



WOLFFISH OR
"SPOTTED SEA CATFISH"
(ANARRHICHAS MINOR)

WOLFFISH OR SPOTTED SEA CATFISH (*ANARRHICHAS MINOR*) IS ONE OF TWO SPECIES OF WOLFFISH FILLETED AND FROZEN IN NORWAY.

fish yield white-meated fillets which look good in cellophane packages. Reports indicate that Norwegian sales efforts for these fillets (marketed as ocean catfish fillets) in the United States have met with unusual success.

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NEW TYPE BARREL INVENTED: A new type of barrel, which is 100 percent airtight and watertight, has been patented by Johannes Thaulle of Haugesund, Norway, reported the Norwegian Information Service on November 20. First ever to be designed for liquids of light buoyancy, this barrel is now in production at O. Hamres Fabrikk, Haugesund, and will shortly be made at five other cooperages in Norway. The inventor has already sold production rights to a Swedish factory and is presently negotiating with companies in Denmark, Canada, and the United States.

This cylinder-shaped barrel is made according to a new patented method which cuts labor cost substantially. Composition staves, fastened to a specially-designed cylinder of the same shape and cubic content as the finished barrel, are fused under great hydraulic pressure by means of ultrahigh-frequency rays. The conic bottom, which snaps into a conic hoop, is patented throughout the world.

Made of "fibonitt," a composition of wallboard and plastic, the low-cost barrel is ideally suited for salted herring because it saves 20 to 30 percent of the required brine. Barrels made of wooden staves usually absorb quite a few pounds of the salt solution.

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NORWEGIAN WHALE MEAT ACCEPTED IN UNITED STATES RESTAURANTS:



Introduced in the United States late in 1951, Norwegian whale meat has already met with wide acceptance by some of the finest restaurants in the United States, reports The South African Shipping News and Fishing Industry Review of October 1952. Surveys indicate that there is a potential market for about 10 million pounds of whale meat in the United States. The main problem to date has been limited supply rather than demand, but one of Norway's main exporters hopes to increase exports to the United States to about 5 million pounds in 1952.

Whale meat exported to the United States is quick-frozen and packed in handy cartons. A good whale steak, enough for three persons, sells for 85 to 90 cents retail. It compares favorably with beef tenderloin.

The Seamen's Institute in New York City recently added Norwegian whale meat cutlets as a regular course on its daily menu.

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HERRING FISHERY OFF WEST COAST OF AFRICA BEING DEVELOPED: Two fishing vessels from Romsdal, Norway, were due to sail late in October on an expedition to purse seine for herring off the west coast of Africa, reports the October 1952 South African Shipping News and Fishing Industry Review. The leader of the expedition declares that herring are abundant off West Africa and are suitable for reduction into meal and oil. A total of £22,500 (US\$62,500) has been invested in this enterprise.

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NEW HERRING FISHING GROUNDS DISCOVERED: For the first time in history, Norwegian fishing vessels fished for herring in waters 280 nautical miles off the west coast of Norway near the Faeroe Islands and made large catches, the Norwegian Information Service reported on December 4. A total catch of well over 200,000 barrels of pickled herring (average catch--4 barrels per net) was landed in a two-month period by a fleet of about 15 ocean-going vessels (ranging in size up to 400 tons) using drift nets on the Faeroe Banks.

The Faeroe fishery actually was the tail-end of the Iceland herring fishery. On its search for food, the herring follow the current of cold water running from Iceland past the Faeroes until they plunge through warmer waters in order to spawn along the Norwegian coast. Rough outlines of the route followed by the herring throughout the year have been established by means of tagging and electronic instruments by the Norwegian Fisheries Directorate research vessel G. O. Sars.



Portugal

WHOLESALE PRICES FOR SELECTED CANNED FISH AND FROZEN SHELLFISH: The table lists average Portuguese wholesale prices for selected canned fish products and frozen shellfish products during January, February, and March 1952.

Portuguese Average Wholesale Prices for Preserved Fish, January-March 1952						
Item	January 1952		February 1952		March 1952	
	Escudos	US\$	Escudos	US\$	Escudos	US\$
Canned Fish:	(Price per case f.o.b. Lisbon).....					
Sardines in olive oil ^{1/}	355.30	12.40	332.50	11.60	317.30	11.07
Sardines in peanut oil ^{1/}	326.30	11.40	320.00	11.17	229.50	8.00
Mackerel in olive oil ^{1/}	330.60	11.54	360.00	12.56	332.12	11.59
Filletts of anchovies ^{2/}	323.00	11.27	314.10	10.96	317.50	11.08
Frozen Shellfish:	(Price per pound f.o.b. Lisbon).....					
Octopus, frozen	5.91	.20	5.64	.20	6.36	.22
Cuttlefish and squid, frozen ...	6.36	.22	5.45	.19	6.14	.21
^{1/} PACKED IN 100-CAN CASES, 1/4 CLUB, 30 MM.						
^{2/} PACKED IN 100-CAN CASES, 1/10 CLUB.						

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FISHERY LANDINGS, 1951: Landings of fish and shellfish (not including whales and cod) in continental Portugal during 1951 amounted to 176,987 metric tons, valued at 627,944 contos (US\$21,978,040), as compared with 171,720 metric tons, valued at 648,069 contos (US\$22,682,415), in 1950, according to an American Embassy dispatch of July 21 from Lisbon. These totals include landings of the coastal, otter-trawl, fresh-water, and shellfish fisheries. Salt-water fish comprised the bulk of the landings (see table).

Portuguese Fish and Shellfish Landings, 1951/			
I T E M	Quantity	Value	
	Metric Tons	Port. Contos	US\$
Salt-water fish	170,715	610,714	21,374,990
Fresh-water fish	556	3,992	139,755
Shellfish	5,716	13,237	463,295
Total fish and shellfish	176,987	627,944	21,978,040
<u>Landings of Selected Species:</u>			
Tuna and similar species	2,090	18,717	655,095
Sardines	78,252	244,311	8,550,885
Chinchards (horse mackerel)	34,727	69,746	2,441,110
Pargo and common sea bream	9,288	42,829	1,499,015
Whiting	11,221	93,090	3,258,150
Anchovy and Sprat	2,983	14,719	515,165
Cuttlefish	554	2,025	70,875
Squid	462	2,367	82,845
Octopus	742	4,002	140,070
1/ DOES NOT INCLUDE: (A) LANDINGS AT MADEIRA AND AZORES ISLANDS; (B) LANDINGS OF COD AND WHALES.			

Trawl Fishery, 1951: Trawling on the high seas during 1951 yielded a catch of 37,074 metric tons, valued at 189,932 contos (US\$6,647,620), compared with 38,644 tons, valued at 183,711 contos (US\$6,429,885), in 1950. The average monthly number of vessels utilized in 1951 was 77. A total of 3,892 trips were made during the year as compared to 3,101 trips in 1950. Trawling operations were carried out chiefly off Cabo Branco on the northwestern coast of Africa. Varieties of fish caught were chiefly whiting, pargo, and sea bream. (The gremio of owners of trawling vessels, a semi-official trade organization, reports the 1951 trawl landings as 39,351 tons and the 1950 catch as 40,593 tons; total trips in 1951 as 3,937 and in 1950 as 4,179.)

Cod Fishery, 1951/52: Vessels taking part in the 1951/52 cod-fishing season (July 1-June 30) were 45 schooners and 20 trawlers. These vessels operated off the Grand Banks of Newfoundland and Greenland and brought in 48,959 metric tons of wet cod, of which 24,528 tons were caught by schooners and 24,431 tons by trawlers. During fishing operations, however, three schooners were lost. The amount of dried cod obtained from this catch is not yet available, but on a percentage loss basis of wet to dry cod that figure should be about 34,761 tons, or slightly less than the 1950/51 season.



Sweden

DEPTH INDICATOR DEVICE FOR FLOATING TRAWL NETS BEING DEVELOPED: A device which will indicate the depth of a floating trawl within one meter (3.3 feet) is being developed in Sweden, according to Fiskaren (Nov. 12), a Norwegian trade paper. Upon completion it is slated for testing by a Government research vessel.

A one-boat floating trawl has been developed by a Norwegian and demonstrated before the Ocean Research Institute which, reportedly, was enthused over the results of the test. The trawl stays open without other boards, can be operated by a 50 hp.-boat, and is cheaper than drift gill nets, according to the inventor, who is now seeking a patent on his invention.



Union of South Africa

NEW SPINY LOBSTER FISHING GROUNDS EXPLORED: Experimental trawling for spiny lobsters was carried on during August 1952 off the Natal Province coast of South Africa by the privately-owned Cape Town trawler Mary Mortimer, the October 1952 South African Shipping News and Fishing Industry Review reports. Although the vessel had varied success in the initial stages of the trip, one catch yielded 8,000 spiny lobsters. The catches so far have been absorbed by the local market at Durban. The dealers in that city reported that the spiny lobsters were 16 to 18 inches in length and possessing a softer shell than the Cape-Town variety. The color is lighter and when cooked the spiny lobsters turn pink instead of red.

Whether or not further development of these spiny lobster grounds is possible will not be known until data collected are studied and additional reports are received on the acceptability of the product. In the past other research vessels have established that there are spiny lobster resources off the Natal coast which have not been exploited.



United Kingdom

GOVERNMENT AID TO THE FISHING INDUSTRY: Further Government aid to the fishing industry was announced in the House of Commons before the 1952 summer recess of Parliament, reports an August 12 dispatch from the American Embassy in London. This additional assistance is to be given as (1) a continuance of the white-fish subsidy, and (2) loans for building and equipping fishing vessels for the inshore, and near- and middle-water fleets.

White-Fish Subsidy: The white-fish subsidy was introduced as a temporary measure to alleviate the distress of those engaged in this industry (as distinct from the herring fisheries) following the disastrous glut in 1949. After the creation of the White Fish Authority in 1951 it was continued pending studies by that Authority with a view to reorganize the industry along more profitable lines which would eliminate the need for such assistance. It applied to near- and middle-water vessels and the inshore fisherman only, and was introduced July 30, 1950, for a period of six months' duration. Since its inception it has been extended several times and efforts have been made to include the distant-water trawlers (over 140 feet in length). On July 24, 1952, the Minister of Agriculture and Fisheries announced that payment would be maintained until March 1953 although it had been agreed not to increase the rates generally but to consider "one or two minor upward adjustments" to make the total level of expenditure almost that of last year. This was done in consultation with the White Fish Authority whose first annual report recommended such continuance. The total subsidy for the year ending March 1952 was close to the annual estimated total projected when the subsidy was first put into operation. The subsidy payments were as follows:

<u>Near- and Middle-Water Trawlers:</u>		<u>£</u>	<u>US\$</u>
England and Wales	722,353	2,022,588	
Scotland	348,690	976,332	
<u>Inshore Trawlers:</u>			
England and Wales	182,572	511,202	
Scotland	301,173	843,284	
Northern Ireland	19,404	54,331	
Total	1,574,192	4,407,737	

Loans: Proposed legislation was also announced in the House to provide grants for building and equipping fishing vessels not exceeding 140 feet in length. The intention is that the grant should be at the rate of not more than 20 percent with a maximum of £16,000 (US\$27,800) and, in the case of the smaller vessels owned by working fishermen, 25 percent with a maximum of £4,000 (US\$11,120). It is understood these loans will be in addition to those empowered to the White Fish Authority by the Sea Fish Industry Act of 1951 and to the Herring Industry Board by the Herring Industry Scheme of 1951. The White Fish Authority report put the cost of building a 110- to 125-foot trawler at £60,000 to £100,000 (US\$166,800-278,000) at present. An inshore vessel under 70 feet would cost not less than £30,000 (US\$83,400).

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GOVERNMENT TO BUILD FISHING TRAWLERS: A plan for the British Government to build fishing trawlers for lease to private fishing firms was under discussion by the National Executive Committee of the Labour Party at a conference held in November, reports the November 15 Fish Trades Gazette, a London trade periodical. The cost of building modern fishing vessels is now so high that private enterprise cannot afford to re-equip the industry, and since up-to-date trawlers would be necessary for national defense in wartime, the Government must now build them. Also, the fishing industry would be in a better position to keep down the price of fish if it was not burdened with the capital cost of building new vessels.

The president of the British Trawlers' Federation commented that if the charter rate for leasing such government-owned vessels was considerably less than the present cost of keeping trawlers at sea and building new vessels, the plan would be welcome. However, until the stocks of fish in the near and middle waters are considerably improved, the real incentive to go along with such a plan would be lacking.

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GOVERNMENT GRANTS FOR BUILDING AND EQUIPPING FISHING VESSELS: The proposal to provide Government financial help for the building of fishing vessels will be implemented in a bill to be introduced before the new Parliament, according to the Speech from the Throne at the formal opening of Parliament on November 4, 1952. The original plan for British Government grants for building and equipping fishing vessels was announced in the House of Commons in July 1952.

As this project was considered an essential one by the White Fish Authority in its first annual report, it is expected that action will not be long delayed. However, should orders for new fishing vessels be forthcoming from foreign sources, particularly those in a position to assist the dollar-export program, delay may be experienced through lack of shipyard facilities, reports a November 6 dispatch from the American Embassy in London.

Although the deep sea or "distant water" trawlers will be excluded from the scheme of financial assistance, it is probable that the smaller vessels that will

be built will incorporate many of the improved features of design and equipment found in the larger vessels. Particular attention will likely be paid to mechanization of the tasks incidental to fishing and comfort of the crew, since efforts will be made to attract men to these smaller vessels which always suffer in competing with the larger vessels for fishermen.

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WHITE FISH AUTHORITY REPORT ON LEVIES COLLECTED FROM FISHING INDUSTRY: The White Fish Authority collected £252,591 (US\$703,314) in levies from the British fishing industry as of November 15, reports a dispatch from the American Embassy at London dated November 24. This levy was placed on the industry when the White Fish Authority was given approval on May 10 by the Minister of Agriculture and Fisheries to grant loans (up to 60 percent of the cost) for building or improving fishing vessels not exceeding 140 feet in length.

The Authority has spent £65,912 (US\$183,525) on general administrative expenses, training grants, research and experiment, and export promotion. The balance is being held for expenditure on projects which the Authority will be undertaking under the powers conferred on it by Section 4 of the Sea Fish Industry Act, 1951.

* * * * *

SHIP-TO-SHORE TELEVISION PICTURES OF SEA BOTTOM: Television pictures of the sea bottom 100 feet below the surface were clearly seen on the shore some 16 miles distant in trials carried out in Portsmouth, England, during September by the H. M. S. Reclaim, reports the November 22 issue of The Fishing News, a British trade periodical. Viewers in Portsmouth were able to see the diver, fish, and crabs.

These tests were successfully completed using special equipment for relaying underwater television pictures from ship to shore. The equipment was designed and produced by a Cambridge (England) firm. The 16-mile distance tested is not the full range of the ship-to-shore link nor is the 100-foot depth the maximum operating depth of the television camera.

"The ship-to-shore transmitter was supplied from the normal ship's A. C. supply, the input was 2.3 kw. from a 240-volt, 50-cycle supply. The output of the transmitter was theoretically 500 watts, but it was estimated that the actual output during the trials was in the order of 250 watts R.F. At the shore station the signals were frequency-converted, amplified, and fed in a closed circuit to a number of standard receivers," according to the British trade periodical.

* * * * *

ULTRASONIC BEAM TO LOCATE WHALES: British whaling expeditions to the Antarctic this season (commencing January 1953) will employ a device which utilizes ultrasonic sound pulses to locate whales, a November 28 dispatch from the American Embassy reported. This ultrasonic "whale-finder" uses the Asdic principle by which the range of a target in the water is measured by the time interval between the transmission of an ultrasonic sound pulse and the reception of an echo from the object. Its bearing relative to the vessel is also indicated.

This "whale-finder" equipment was demonstrated at the Barkingside factory of a British marine firm under electronically-simulated sea conditions. Its potential value to whale hunters was shown successfully.

Although the whale can be attacked only on the surface, its position in the water can be located with reasonable accuracy at any distance up to 2,000 yards. Since the ultrasonic beam can be deflected downward to an angle of 45 degrees to the water's surface, the whale's movement can be followed while it is "sounding," which may be for as long as 15 to 20 minutes. The harpoon-gunner will then know the location of the whale as it again surfaces.

Also, it has been reported that helicopters will be used for locating whales this season.



COD - THE BEEF OF THE SEA

Cod is extremely plentiful and inexpensive this winter, according to reports from the U. S. Fish and Wildlife Service.

Economical main dishes that will lower the homemakers' food budget are featured in Fishery Leaflet 269--Cod - The Beef of the Sea. This publication contains background material and helpful suggestions on the purchase and preparation of cod.



Have you ever smelled the delicious aroma of a cod chowder simmering on the stove, and sat down to a big bowl of its creamy goodness? Have you ever tried those delectable morsels from the land of the Cabots and Lodges--cod cakes fried in hot fat until they are a glorious sun tan? Have you ever tried smoked cod, that table delicacy that holds a gustatory pleasure for many? At the

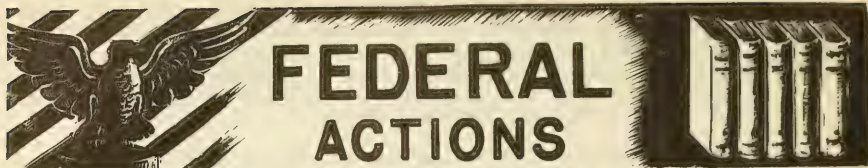
next opportunity try this cod chowder and see if it doesn't rate high in eating pleasure.

COD CHOWDER

2 POUNDS COD FILLETS
1/4 CUP BACON, DICED
3/4 CUP ONIONS, DICED
2 CUPS HOT WATER

2 CUPS POTATOES, DICED
1-1/2 TEASPOONS SALT
DASH PEPPER
4 CUPS RICH MILK

Cut fillets in 1 inch cubes. Fry bacon until crisp and golden brown. Add onion and slightly brown. Add water and potatoes and cook 10 minutes, or until potatoes are practically done. Then add cod, and cook until it can be separated into large flakes with fork. Add remaining ingredients and heat. Sprinkle top with chopped parsley. Makes 6 servings. This is a U. S. Fish and Wildlife Service tested recipe.



Department of Commerce

BUREAU OF THE CENSUS

RECOMMENDATIONS FOR CHANGES IN LISTING OF IMPORTS REQUESTED: A limited number of "statistical" revisions are planned in Schedule A, Statistical Classification of Commodities Imported into the United States, effective January 1, 1954. Changes in Schedule A, other than those required because of the negotiations under GATT, will be considered. In making changes to be effective January 1, 1954, consideration will be given to all recommendations now on file, as well as to any other recommendations which are received by May 1, 1953. It will probably not be possible to make all the recommended changes in view of the limitations on available resources, and users of the statistics are, therefore, requested to recommend only changes which they feel to be urgent.

All members of the fishery and allied industries who feel that listings of imports of fishery products should be shown in greater detail are urged to send their recommendations to the Foreign Trade Division, Bureau of the Census, Department of Commerce, Suitland, Maryland.

In addition to changes recommended by users of the import figures, it is anticipated that some combinations of Schedule A classifications may be made on or before January 1, 1954. These combinations would be made of classifications which have the same Tariff status, which are adjacent in Schedule A, and for which imports are relatively small in terms of value or which represent reporting problems. A study is now in process to determine the areas where such combinations could be made. It is believed that economy in compiling costs as well as improved accuracy in the statistics will result from some combinations.

Any changes made as a result of recommendations by users of the figures or as a result of this study will, of course, be subject to the approval of the Advisory Interdepartmental Committee on Foreign Trade Commodity Classification.

Almost all revisions made in Schedule A in recent years have been those which became necessary as a result of negotiations under GATT. No thorough investigation or revision of Schedule A has been made for a number of years. In view of limited resources available and the need to do other foreign trade compiling work which appears to be more urgent at this time, a complete investigation of Schedule A is not being planned for the immediate future. But users of import statistics are at present being given this opportunity to recommend changes in the listing of imports.

NATIONAL PRODUCTION AUTHORITY

CAN QUOTA-PERCENTAGE RESTRICTIONS EXPIRE: Quota-percentage restrictions on the quantity of cans which could be used to pack various products (including fishery products) expired December 31, 1952, the National Production Authority announced.

This action is a clarifying amendment to NPA's Order M-25 (Cans) removing those parts of the order which became obsolete in 1953. The quota-percentage limit-

tations established in the order were made effective only until December 31, 1952. Revocation of Directions 2, 3, and 5 to M-25, effective January 1, 1953, to implement elimination of the quota restrictions was also announced.

This amendment also includes "fibre-body cans" in the order's definition of "cans," restoring the situation which existed prior to the last amendment to M-25, issued October 2, 1952. The change is being made for the sake of administrative efficiency and convenience.

The quota-percentage limitations of M-25 are being permitted to lapse because the action is not expected to involve a net increase in the industry's use of tin, explained NPA.

Direction 2, issued December 12, 1951, required can manufacturers to meet current demands for cans before filling carry-over requirements on a prorata basis.

Direction 3, issued December 29, 1951, set up standard procedures whereby can users were enabled to calculate their quarterly base quotas on the amount of cans they might use to pack a particular product.

Direction 5, was issued September 9, 1952, to permit can manufacturers to minimize cutting losses which would result if the restrictions of M-25 were made to apply to tin plate purchased under emergency conditions during and after the steel strike. The Direction permitted can manufacturers to make and sell cans or parts of cans made of such tin plate for packing any product irrespective of the can material specifications and quantity usage limitations of M-25.

Can material specifications remain in effect.

The full text of M-25, as amended December 31, 1952, follows (but only fishery products are abstracted from the original Schedule I as it appears in the order):

M-25

AS AMENDED

DEC. 31, 1952

(Effective JAN. 1, 1953)

This amended order is found necessary and appropriate to promote the national defense and is issued pursuant to the Defense Production Act of 1950, as amended. In the formulation of this amended order there has been consultation with industry representatives, including trade association representatives, and consideration has been given to their recommendations. However, consultation with representatives of all trades and industries affected by the issuance of this amended order has been rendered impracticable because the amended order affects a very substantial number of different trades and industries.

EXPLANATORY

This amended order affects NPA Order M-25 as amended October 2, 1952, in the following respects:

1. The definition of "can" in section 2 has been amended to include fibre-body cans, and a new paragraph has been added to exempt such cans from the can material specifications of Schedule I.

2. Those provisions of the order which established quota percentage limitations

or were predicated on the existence of quota percentage limitations have been deleted, since such provisions were drawn to expire by their own terms with the year 1952.

Directions 1 and 4 to NPA Order M-25 have previously been revoked.

Directions 2, 3, and 5 to NPA Order M-25 are being revoked effective January 1, 1953.

REGULATORY PROVISIONS

Sec.

1. What this order does.
2. Definitions.
3. Restrictions on use of cans.
4. Restrictions on manufacture, sale, and delivery of cans.
5. Restrictions on quantity of cans that may be accepted.
6. Manufacture and use of cans conforming to former specifications.
7. Preference in filling defense orders.
8. Exceptions.
9. Certification of delivery of cans.
10. Request for adjustment or exception.
11. Records and reports.
12. Communications.
13. Violations.

AUTHORITY: Sections 1 to 13 issued under sec. 704, 64 Stat. 816, Pub. Law 429, 82d

Cong.; 50 U. S. C. App. Sup. 2154. Interpret or apply sec. 101, 64 Stat. 799, Pub. Law 429, 82d Cong.; 50 U. S. C. App. Sup. 2071; sec. 101, E. O. 10181, Sept. 9, 1950, 15 F. R. 8105; 3 CFR, 1950 Supp.; sec. 2, E. O. 10200, Jan. 3, 1951, 16 F. R. 61; 3 CFR, 1951 Supp.; secs. 402, 405, E. O. 10281, Aug. 28, 1951, 16 F. R. 8789; 3 CFR, 1951 Supp.

SECTION 1. *What this order does.* This order places restrictions upon the acceptance of, the delivery of, and the uses of cans. Schedule I sets out required plate specifications which vary according to the products packed. NPA Order M-24 permits the use of tin plate andterneplate for cans in accordance with the terms of this order. NPA Order M-8 sets forth specifications for solder that may be used in the manufacture of cans. Under the Controlled Materials Plan (CMP), allotments of tin plate,terneplate, and black plate are made to can manufacturers for the production of cans.

SEC. 2. *Definitions.* As used in this order:

(a) "NPA" means the National Production Authority.

(b) "Can" means any unused container made in whole or in part of tin plate, terneplate, or black plate, which is suitable for packing any product. The term includes any container, other than a glass container, which has a closure or fitting made in whole or in part of tin plate, terneplate, or black plate, but does not include fluid milk shipping containers nor crown closures for cone-topped cans.

(c) "Person" means any individual, corporation, partnership, association, or any other organized group of persons, and includes any agency of the United States Government or of any other government.

(d) "Packer" means any person who either (1) purchases or manufactures empty cans and fills such cans in packing any product, or (2) purchases empty cans and has them filled for his account by another party, but who controls sale and distribution of the finished product after packing.

(e) "Tin plate" means steel sheets coated with tin, and includes electrolytic tin plate, hot-dipped tin plate, primes, seconds, unsorted, tin plate waste-waste, menders, unmended menders, and unsorted temper tin plate. Tin plate (except waste-waste) is furnished as "specification production plate" or "mill accumulation plate," and each such class includes primes, seconds, and unsorted. Specification production plate is plate produced against orders for specific end uses. Mill accumulation plate is plate arising in the production of specification production plate not applicable against such orders.

(f) "Terneplate" means steel sheets coated with terne metal, and includes special coated manufacturing ternes (SCMT), manufacturing ternes, primes, seconds, unsorted, and terneplate waste-waste.

(g) "Waste-waste" means hot-dipped or electrolytic tin-coated steel sheets or steel sheets coated with terne metal which have been rejected during processing by the producer because of imperfections which disqualify such sheets from sale as primes, seconds, or unsorted.

(h) "Unmended menders" means tin-coated steel sheets arising in the production of electrolytic tin plate which have been set aside by the producer by reason of surface appearance which disqualifies such sheets from sale as primes, seconds, or unsorted.

(i) "Menders" means tin-coated steel sheets arising in the production of electrolytic tin plate which have been set aside by the producer by reason of surface appearance which disqualifies such sheets from sale as primes, seconds, or unsorted, and mended either into coke tin plate primes, seconds, or unsorted by hot-dipping in tin; or into primes, seconds, or unsorted terneplate by hot-dipping in terne metal.

(j) "Unsorted temper tin plate" means primes, seconds, or unsorted tin plate, arising in the production of hot-dipped or electrolytic tin plate, which has been packaged without regard to temper.

(k) "Waste" means protective sheets and lacquered or lithographed misprint sheets of tin plate, terneplate, or black plate, and includes scrap such as strips and circles produced in the ordinary course of manufacturing cans, and tin plate strips, terneplate strips, or black plate strips, produced in the ordinary course of manufacturing tin plate, terneplate, or black plate. The term also includes tin plate, terneplate, or black plate parts recovered from used cans.

(l) "Black plate" means steel sheets (other than tin plate or terneplate) 29-gage (128 pounds) or lighter. The term includes can manufacturing quality black plate (CMQ), chemically treated black plate (CTB), primes, seconds, and unsorted.

(m) "Black plate rejects" means black plate 29-gage (128 pounds) or lighter, which has been rejected during processing by the producer because of imperfections which disqualify such black plate from sale as primes, seconds, or unsorted, and which has been segregated as to gage and size.

(n) "Black late wasters" means black plate 29-gage (128 pounds) or lighter which has been rejected during processing by the producer because of imperfections which disqualify such black plate from sale as primes, seconds, or unsorted, and which has been segregated as to gage but not as to size.

(o) "Black plate waste-waste" means black plate 29-gage (128 pounds) or lighter which has been rejected during processing by the producer because of imperfections which disqualify such black plate from sale as primes, seconds, or unsorted, and which has not been segregated as to either gage or size.

Sec. 3. Restrictions on use of cans. Subject to the exceptions set forth in section 8 of this order, no person shall use cans for any purpose other than for packing a product listed in Schedule I, which appears at the end of this order, in accordance with the can material specifications set out in Schedule I.

Sec. 4. Restrictions on manufacture, sale, and delivery of cans. No person shall manufacture, sell, or deliver cans which he knows or has reason to believe will be accepted or used in violation of the terms of this order or any other order or regulation of NPA. No person shall sell or deliver empty cans which he knows or has reason to believe will be exported outside of the continental limits of the United States, its territories and possessions (unless such export is to Canada) except as permitted under section 8 (g) of this order.

Sec. 5. Restrictions on quantity of cans that may be accepted. No person shall accept delivery of any cans at a time when his inventory thereof exceeds, or by acceptance of such delivery would be made to exceed, a practicable minimum working inventory of cans, as defined in NPA Reg. 1, as now in force or as hereafter amended.

Sec. 6. Manufacture and use of cans conforming to former specifications.

Schedule I of this order as from time to time hereafter amended may establish can material specifications for packing a certain product or products differing from those theretofore established. Whenever the can material specifications respecting the packing of any product are amended, a can manufacturer shall continue to make, sell, and deliver cans and/or parts of cans conforming to the specifications for packing that product which were in force immediately prior to the effective date of the particular amendment, and shall not make any cans and/or parts of cans conforming to the specifications established by that amendment, so long as there is available to him specification production tin plate, terneplate, or black plate which was intended for his use in making cans for packing that product in accordance with the specifications in force immediately prior to the effective date of that particular amendment, and which, on the effective date of that particular amendment, was in process of manufacture for his account and cannot be converted to the specifications established by that particular amendment, or was held for his account by the manufacturer, or was held in his own inventory. Moreover, whenever the can material specifications for the packing of any product are amended, no packer shall use for packing that product any cans and/or parts of cans conforming to the specifications established by that amendment so long as any plate, cans, and/or parts of cans conforming to the specifications for packing that product which were in force immediately prior to the effective date of that amendment are available to him, whether in process of manufacture for his account, or held for his account by the manufacturer, or held in his own inventory.

Sec. 7. Preference in filling defense orders. So far as practicable, every can manufacturer shall schedule his operations (including his ordering of tin plate, terneplate, and black plate) so as to insure delivery of all rated orders bearing a program identification consisting of the letter A, B, C, or E, and one digit (including the program identification B-5 where it appears as a suffix), and any other orders under NPA directives.

Sec. 8. Exceptions. (a) The can material specifications in Schedule I do not apply to cans used to pack any product in home canning, community canning, or institutional (meaning such institutions as prisons, vocational schools, and mental hospitals) canning where the product is not to be sold. This exception also applies to cans for packing laboratory samples and control samples, but not to cans for packing samples distributed for the purpose of advertising or for promoting the sale of a product, or to any cans used for packing products which are later repacked and sold.

(b) The can material specifications in Schedule I do not apply to cans or parts of cans made entirely of any of the following materials or entirely of any combination thereof:

Mill accumulation plate.
Unassorted temper tin plate.
Unmended menders.
Tin plate waste-waste.
Tin plate waste.
Terneplate.
Terneplate waste-waste.
Terneplate waste.
Black plate.
Black plate rejects.
Black plate waste-waste.
Black plate waste.
Black plate waste.

(c) The can material specifications in Schedule I do not apply to fibre-body cans having other parts made of any material or materials defined in section 2.

(d) Rated orders bearing a program identification consisting of the letter A, B, C, or E, and one digit (including the program identification B-5 where it appears as a suffix), are exempt from the restrictions in section 5 of this order on the quantity of cans that may be accepted.

(e) The can material specifications set out in Schedule I of this order shall not apply to rated orders bearing a program identification consisting of the letter A, B, C, or E, and one digit (including the program identification B-5 where it appears as a suffix), and requiring the packing of products in accordance with military or Federal specifications for the Department of Defense for use outside the 48 States of the United States and the District of Columbia by the Armed Forces of the United States, including the United States Coast Guard.

(f) The restrictions of this order shall not apply to military requirements for cans of a special design or style not normally produced or used commercially, or to cans for emergency rations and supplies for lifeboats.

(g) The provisions of this order shall not apply to the sale or delivery of empty cans where the person selling or delivering the same has received a validated export license therefor from the Office of International Trade, or has received from another person a certificate signed manually. This certificate shall be by letter in substantially the following form: the inapplicable words stricken therefrom, shall constitute a representation to the sell and to NPA, and shall be filed with each purchase order with the person selling or delivering to such other person cans for export:

To ----- seller:
The undersigned purchaser certifies, subject to criminal penalties, that (he has received a certification from another person that) the Office of International Trade has issued to (him) (such other person) validated export license No. ----- for export shipment of all of the items included in the attached purchase order, and that all purchases from you of items included in the said purchase order and the acceptance of the same will be in compliance with the said validated export license.

In cases of export to those countries where the Office of International Trade does not require an export license, no certificate shall be required until such time as an export license is required by the Office of International Trade.

Sec. 9. *Certification of delivery of cans.* No manufacturer, jobber, or distributor shall sell or deliver cans unless he has received from the purchaser a certificate signed manually. This certificate shall be by letter in substantially the following form, shall constitute a representation to the seller and to NPA, and, once filed by a purchaser with a manufacturer, jobber, or distributor, shall cover all future deliveries of cans from the manufacturer, jobber, or distributor to that purchaser:

To ----- manufacturer, jobber, or distributor: The undersigned purchaser certifies, subject to criminal penalties, that he is familiar with Order M-25 of the National Production Authority, and that all purchases from you of items regulated by that order, and the acceptance and use of the same by the undersigned, will be in compliance with said order, and any amendments thereto.

Sec. 10. *Request for adjustment or exception.* Any person affected by any provision of this order may file a request for adjustment or exception upon the ground that such provision works an undue or exceptional hardship upon him not suffered generally by others in the same trade or industry, or that its enforcement against him would not be in the interest of the national defense or in the public interest. In examining requests for adjustment or exception claiming that the public interest is prejudiced by the application of any provision of this order, consideration will be given to the requirements of the public health and safety, civilian defense, and dislocation of labor and resulting unemployment that would impair the defense program. Each request shall be in writing, submitted on Form NPAP-38, in triplicate, and shall set forth all pertinent facts, the nature of the relief sought, and the justification therefor. Form NPAP-38 must be executed as therein required.

Sec. 11. *Records and reports.* (a) Each person participating in any transaction covered by this order shall make and preserve, for at least 3 years thereafter, accurate and complete records of receipts, deliveries, inventories, production, and use, in sufficient detail to permit the determination, after audit, whether each transaction complies with the provisions of this order. This order does not specify any particular accounting method and does not require alteration of the system of records customarily used, provided such records supply an adequate basis for audit. Records may be retained in the form of microfilm or other photographic copies instead of the originals by those persons who, at the time such microfilm or other photographic records are made, maintain such copies of records in the regular and usual course of business.

(b) All records required by this order shall be made available for inspection and audit by duly authorized representatives of the National Production Authority, at the usual place of business where maintained.

(c) Persons subject to this order shall make such records and submit such reports to the National Production Author-

ity as it shall require, subject to the terms of the Federal Reports Act of 1942 (5 U. S. C. 139-139F).

Sec. 12. *Communications.* All communications concerning this order shall be addressed to the National Production Authority, Washington 25, D. C. Ref: NPA Order M-25.

Sec. 13. *Violations.* Any person who willfully violates any provision of this order, or any other order or regulation of NPA, or who willfully furnishes false information or conceals any material fact in the course of operation under this order, is guilty of a crime and upon conviction may be punished by fine or imprisonment or both. In addition, administrative action may be taken against any such person to suspend his privilege of making or receiving further deliveries of materials or using facilities under priority or allocation control and to deprive him of further priorities assistance.

NOTE: All reporting and record-keeping requirements of this order have been approved by the Bureau of the Budget in accordance with the Federal Reports Act of 1942.

Schedule I is hereto attached and made a part of this order.

This amended order shall take effect January 1, 1953.

NATIONAL PRODUCTION
AUTHORITY,

By GEORGE W. AUXIER,
Executive Secretary.

SCHEDULE I OF NPA ORDER M-25—CAN SPECIFICATIONS

The figures in columns (2) and/or (3) specify the maximum weight in pounds of coating per base box of tin plate which may be used for the parts of cans for the products listed in column (1). Any packer may substitute, for packing a listed product, a can with a tin-coating lighter than that specified for that product.

EXCEPTIONS

1. Electrolytic 0.25 tin plate may be used for drawn fittings which are not required to be attached by soldering.
2. Electrolytic 0.50 tin plate may be used in place of electrolytic 0.25 tin plate or terneplate for all soldered parts of 5-gallon square cans, and for drawn soldered fittings for any cans.
3. Hot-dipped 1.25 tin plate may be used for the body of a scored can to pack any of the meat products listed in this schedule.
4. Tin plate menders arising in the production of electrolytic tin plate may be used where either electrolytic or hot-dipped tin plate is permitted in this schedule.

Product (1)	Can materials	
	Soldered or welded parts (2)	Non-soldered parts (3)
<i>Fish and shellfish</i>		
89. Caviar.....	.25	.25
90. Chowder, all varieties.....	.25	.25
Enamelled cans.....	1.25	.25
Plain bodies.....	.25	.25
91. Clam juice.....	.25	.25
1-gallon and larger cans.....		
Other sizes.....	.25	.25
92. Clams, processed.....	.25	.25
93. Codfish, salted, dry.....	.25	.25
94. Crab and crabmeat.....	.25	.25
Devised.....		
Processed.....	.25	.25
95. Crawfish.....	.25	.25
96. Eels.....	.25	.25
97. Finnan haddie.....		
Round cans.....	.25	.25
Drawn cans.....	.50	.50
98. Fish and seafood, frozen or refrigerated.....	.25	.25
99. Fishballs and cakes.....	.25	.25
100. Fish flakes and ground fish for human consumption only, excluding tuna flakes.....	.25	.25
101. Fish frankfurters.....	.25	.25
102. Fish livers.....	.25	.25
In reusable 5-gallon square cans.....	1.25	1.25
In nonreusable 5-gallon square cans and smaller size cans.....	.50	.50
103. Fish oil.....	.50	.50
104. Fish paste.....	.25	.25
105. Fish, pickled.....	1.50	1.50
106. Fish roe.....		
In round double-seamed cans.....	.25	.25
In oval drawn cans.....	.50	.50
107. Halibut.....	.25	.25
108. Herring, sea and river, in oil, or brine (including alewives, anchovies, mackerel, pilchards, and sardines) (1.25 tin plate may be used for scored covers).....		
Round cans.....	.25	.25
¾ drawn cans.....	.25	.25
¾ 3-piece cans.....	.50	.50
Oval or oblong drawn (other than ¾ drawn).....	.50	.50
109. Herring, sea and river, in tomato or mustard sauce (including alewives, anchovies, mackerel, pilchards, and sardines in oval, round, oblong, or drawn cans) (1.25 tin plate may be used for scored covers).....	.50	.50
110. Lobster, processed or Newburg.....	.25	.25
111. Menhaden.....	.25	.25
112. Mullet.....	.25	.25
113. Mussels, processed.....	.25	.25
114. Oysters, processed.....	.25	.25
115. Salmon.....		
In round double-seamed cans.....	1.25	.25
In oval or drawn cans.....	.50	.50
116. Scallops, processed.....	.25	.25
117. Shad.....		
In round double-seamed cans.....	.25	.25
In oval or drawn cans.....	.50	.50
118. Shrimp, processed.....	.25	.25
119. Squid.....		
Enamelled cans.....	.25	.25
Plain bodies.....	1.25	.25
120. Tuna, including tuna flakes.....	.25	.25
121. Turtle.....	.25	.25
<i>Miscellaneous food products</i>		
176. Animal and pet food.....	.25	.25
177. Baby food.....		
Fish.....	.50	.50
187. Chinese food specialties.....	1.25	.25
Chop suey.....		
Chow mein.....		
Egg foo yong.....		
225. Soups, liquid.....	.50	.50
All other seasonal.....		
Nonseasonal.....	.75	.50
235. All other nonprocessed foods.....	.25	CMQ
236. All other processed foods.....	.25	.25
<i>Nonfood products</i>		
277. Oils, industrial:		
Animal, fish, or vegetable.....		
5-gallon square cans.....	.50	.50
All other sizes.....	.25	.25
294. All other nonfood products.....	.25	CMQ

NOTE: FULL TEXTS OF MATERIALS ORDERS MAY BE OBTAINED FROM NATIONAL PRODUCTION AUTHORITY, WASHINGTON 25, D. C., OR FROM ANY DEPARTMENT OF COMMERCE REGIONAL OR FIELD OFFICE.



Interstate Commerce Commission

TRIP-LEASING REGULATION UPHeld BY SUPREME COURT: The Interstate Commerce Commission regulation regarding trip-leasing has been upheld by the Supreme Court. The lower court decisions upholding the rules governing motor vehicle leasing and interchange prescribed by the Commission in Ex Parte MC-43, Lease and Interchange of Vehicles by Motor Carriers, were affirmed by the Supreme Court of the United States, January 12, in an opinion written by Justice Reed. Justice Black wrote a dissenting opinion, in which Justice Douglas concurred.

One phase of the Commission's regulation prohibits the leasing by regulated motor carriers of equipment for periods of less than 30 days. Therefore, the Supreme Court ruling strikes a severe blow at trip-leasing by regulated carriers of equipment owned or operated by exempt truck lines. Trip-leasing has been used to a considerable extent in the past by truckers serving the fishery industries, especially to provide back hauls for exempt equipment initially used to haul a load of fresh or frozen fishery products.



Department of State

GREAT LAKES FISHERIES CONVENTION PLANNED: Preliminary discussions of a Great Lakes Fisheries Convention were completed on December 19 in Washington, D. C., by representatives of the Canadian and United States Governments, according to a December 19 Department of State news release.

One of the chief problems of immediate concern to the United States and Canadian Great Lakes fishing industries is the parasitic sea lamprey. Most of the discussions concerned this and related problems. Each delegation offered proposals for the setting up of an international commission to handle the sea lamprey and other problems of the fisheries of the Great Lakes.

The conference was scheduled to resume discussions in late January 1953.

A Convention for the Great Lakes fisheries was the aim of the meeting. Certain Great Lakes fisheries, especially the more valuable ones such as the lake trout, are suffering from the scourge of the sea lamprey, a predatory, eel-like creature which lives by attaching itself like a leech to a fish and subsisting upon its blood. It is estimated that some \$5,000,000 in lake trout alone have been lost to this parasite each year since 1949. The sea lamprey has already destroyed the lake trout fisheries of Lakes Huron and Michigan, and is now invading Lake Superior where the lake trout fisheries is threatened with extinction.

The immediate purpose of the Convention is to bring about joint action of the United States and Canada to eradicate this pest. The U. S. Fish and Wildlife Service, cooperating with research agencies in Michigan and other Great Lakes States, has developed electrical and mechanical devices which will control the sea lamprey, but these must be installed on both United States and Canadian shores of the lakes to be effective. In addition, it is expected that arrangements will be made to coordinate the fishery research programs in the Lakes which are now being undertaken by eight State Governments, the Province of Ontario, and the two Federal Governments.

The United States Delegation follows:

CHAIRMAN

WILLIAM C. HERRINGTON, SPECIAL ASSISTANT TO THE UNDER SECRETARY, DEPARTMENT OF STATE.

MEMBERS

DR. J. L. KASK, ASSISTANT DIRECTOR, FISH AND WILDLIFE SERVICE, DEPARTMENT OF THE INTERIOR.

WARREN F. LOONEY, FOREIGN AFFAIRS OFFICER, DEPARTMENT OF STATE.

SYLVIA NILSEN, TREATY ADVISER, DEPARTMENT OF STATE.

WILLIAM M. TERRY, ACTING CHIEF, OFFICE OF FOREIGN ACTIVITIES, FISH AND WILDLIFE SERVICE, DEPARTMENT OF THE INTERIOR.

CLAUDE VER DUIN, MAJOR OF GRAND HAVEN, MICHIGAN; EDITOR OF THE FISHERMAN; EXECUTIVE SECRETARY, MICHIGAN FISH PRODUCERS' ASSOCIATION; SECRETARY, WISCONSIN FISH PRODUCERS' ASSOCIATION.

F. A. WESTERMAN, CHIEF, FISH DIVISION, MICHIGAN DEPARTMENT OF CONSERVATION, LANSING, MICH.

* * * * *

REVISED INTERNATIONAL REGULATIONS FOR PREVENTING COLLISIONS AT SEA: The revised International Regulations for Preventing Collisions at Sea will come into force on January 1, 1954. These regulations were agreed upon among the delegates to the International Safety of Life at Sea Conference held in London in 1948. They were circulated to all interested governments by the Government of the United Kingdom, acting at the invitation of the other participating governments. When substantial unanimity of acceptance had been reached the Government of the United Kingdom was to notify all other governments of that fact, setting an effective date not less than one year ahead. The United States is now in receipt of formal notification that substantial unanimity has been reached and that the date of January 1, 1954, has been decided upon as the effective date for the new Regulations, a U. S. State Department news release dated January 14 announced.

Among the more important changes introduced by the 1948 Regulations are the following:

1. The Regulations apply to seaplanes on the water as well as to watercraft.
2. The second white masthead light which is allowed by the existing Regulations becomes compulsory except for vessels less than 150 feet in length and for vessels engaged in towing.
3. The range of visibility of lights on fishing vessels is standardized at two miles. In the existing regulations no range is specified.
4. The stern light which is allowed by the existing regulations becomes compulsory and its range of visibility is increased from one to two miles.
5. The range of visibility of anchor lights is increased for all vessels under 150 feet in length from one to two miles and for vessels over that length from one to three miles.
6. When a power-driven vessel which, under the regulations, is to keep course and speed, is in sight of another vessel and is in doubt whether the other vessel is taking sufficient action to avert collision, she may use a signal consisting of five short blasts.

The International Regulations for Preventing Collisions at Sea, 1948, have so far been accepted by the following countries:

Australia
Belgium
Brazil
Burma
Canada
Chile
Colombia
Denmark
Dominican Republic
Ecuador
Egypt
Finland

France
Greece
Holland
Hungary
Iceland
India
Iraq
Republic of Ireland
Italy
Mexico
New Zealand
Nicaragua
Norway

Pakistan
Peru
Poland
Rumania
South Africa
Spain
Sweden
Turkey
United Kingdom
U.S.A.
U.S.S.R.
Yugoslavia



Treasury Department

BUREAU OF CUSTOMS

1953 PROCEDURE FOR CONTROL OF TARIFF-RATE QUOTA ON GROUND FISH FILLET IMPORTS:

A new procedure in 1953 for the control of the tariff-rate quota on groundfish (including ocean perch) fillet imports was established by the Bureau of Customs on December 12, 1952. The release making this announcement states:

"The following procedure is established for the control of the tariff-rate quota on fish, fresh or frozen (whether or not packed in ice), filleted, skinned, boned, sliced, or divided into portions, not specially provided for: cod, haddock, hake, pollock, cusk, and rosefish, for the calendar year 1953, as prescribed in the proviso to item 717(b), Part I, Schedule XX, of the General Agreement on Tariffs and Trade (T. D. 51802).

"In order to afford equal opportunities at all ports of entry for filing entries and withdrawals for consumption at the opening of the quota periods, January 2, April 1, July 1, and October 1, 1953, no entries for consumption or warehouse withdrawals for consumption covering these commodities shall be presented on the above dates before 12 noon, eastern standard time, 11:00 a.m., central standard time, 10:00 a.m., mountain standard time, and 9:00 a.m., Pacific standard time.

"Entries and withdrawals for consumption covering the quota fish may be accepted at the rate of 1-7/8 cents per pound provided the delivery permit is not delivered to the importer or his agent pending determination of their quota status. If delivery permit is desired before such determination, importers shall be required to deposit estimated duties at the rate of 2-1/2 cents per pound.

"At ports where a number of entries, or withdrawals, for consumption are anticipated all importers desiring to file such entries covering quota-class fish at the opening of the quota shall be gathered in one place and special arrangements made so that all such entries may be presented at the exact moment of the opening of the quota. Entries so presented in proper form with the deposit of estimated duties will be considered as accepted at the opening moment even though a certain period of time may be required by the customs officer for checking purposes.

"Customs Form 3161 shall show the time zone and exact standard time of presentation of each entry and withdrawal for consumption covering the quota-class fish for the opening day of each quota period and the time of acceptance for the remainder of each period.

"To insure uniformity of practice and that importers at one port shall not be accorded privileges with respect to the entry of any quota merchandise which are denied at other ports, you are hereby instructed that no extension of time for making entry shall be allowed under section 8.59(i), Customs Regulations of 1943, as amended, with respect to any quota merchandise, if such extension includes the first day of the quota period for the merchandise in question.

"The quota on fish (paragraph 717(b)) for the calendar year 1953 will be determined and published in a Treasury Decision as soon after December 31, 1952, as possible."

NOTE: A SUMMARY OF ITEM 717(B), PART I, SCHEDULE XX, OF THE GATT (T. D. 51802) READS: "FISH, FRESH OR FROZEN (WHETHER OR NOT PACKED IN ICE), FILLETED, SKINNED, BONED, SLICED, OR DIVIDED INTO PORTIONS, N.S.P.F.:

COD, HADDOCK, HAKE, POLLOCK, CUSK, AND ROSEFISH:

ON NOT MORE THAN 15 MILLION POUNDS, OR A QUANTITY EQUAL TO 15 PER CENTUM OF THE AVERAGE AGGREGATE APPARENT ANNUAL CONSUMPTION OF SUCH FISH DURING THE 3 CALENDAR YEARS PRECEDING THE YEAR IN WHICH THE IMPORTED FISH ARE ENTERED, WHICHEVER QUANTITY IS GREATER, ENTERED IN ANY CALENDAR YEAR. TARIFF RATE--1-7/8 CENTS PER POUND. (GENEVA AGREEMENT PROVIDES THAT OF THE TOTAL ANNUAL QUANTITY ENTITLED TO ENTRY AT THE RATE OF 1-7/8 CENTS PER POUND, NOT MORE THAN 1/4 SHALL BE SO ENTITLED DURING THE FIRST 3 MONTHS, NOT MORE THAN 1/2 DURING THE FIRST 6 MONTHS, AND NOT MORE THAN 3/4 DURING THE FIRST 9 MONTHS OF ANY YEAR.)

ON OTHER, ENTERED IN ANY CALENDAR YEAR: TARIFF RATE--2-1/2 CENTS PER POUND."



CONTRIBUTION TO THE BIOLOGY OF THE KING CRAB

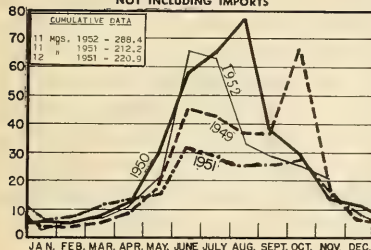
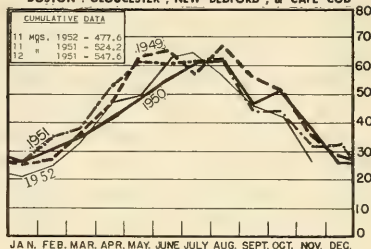
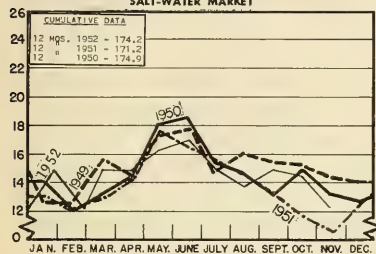
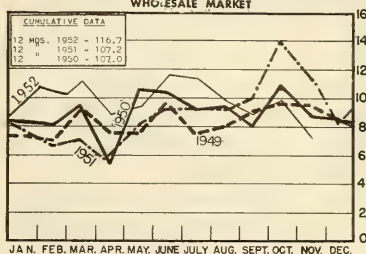
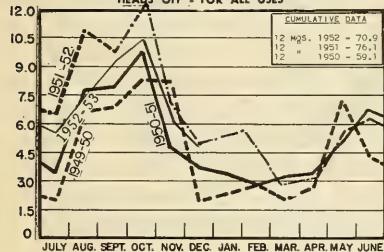
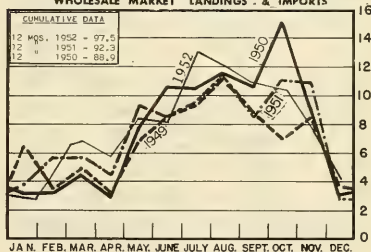
King crab (*Paralithodes camtschatica*, Tilesius) has been an important source of canned crab meat. During the five years, 1935-39, it supplied the raw material for approximately 90 percent of the 10,987,000 pounds of canned crab meat consumed annually in the United States. Practically this entire amount of king crab was imported from Japan and the Soviet Union, only negligible quantities being produced domestically.

The extensive processing of this crab by floating canneries of foreign nationals in Alaskan waters resulted in the President requesting the Secretary of the Interior to investigate the practicability of establishing an American king-crab industry in Alaska. Due to the lack of information necessary in prosecuting such a fishery, the Congress, late in June 1940, approved a special appropriation, authorizing the U. S. Fish and Wildlife Service to conduct an investigation of the king-crab fishery off the coast of Alaska.

Activities of the first expedition, lasting from September to late November 1940, were confined to the Pacific waters between False Pass and Kodiak Island, with the principal fishing and canning operations being conducted in Canoe and Pavlof Bays.

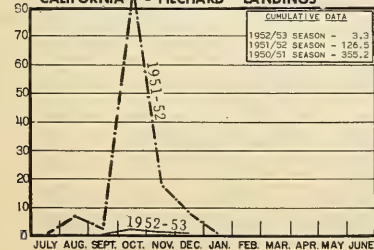
LANDINGS AND RECEIPTS

In Millions of Pounds

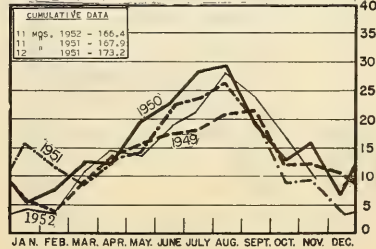
MAINE - LANDINGS
NOT INCLUDING IMPORTSMASSACHUSETTS - LANDINGS
BOSTON, GLOUCESTER, NEW BEDFORD, & CAPE CODNEW YORK CITY - RECEIPTS OF FRESH & FROZEN FISH
SALT-WATER MARKETCHICAGO - RECEIPTS OF FRESH & FROZEN FISH
WHOLESALE MARKETGULF - SHRIMP LANDINGS
HEADS OFF - FOR ALL USESSEATTLE - RECEIPTS OF FRESH & FROZEN FISH
WHOLESALE MARKET LANDINGS & IMPORTS

In Thousands of Tons

CALIFORNIA - PILCHARD LANDINGS



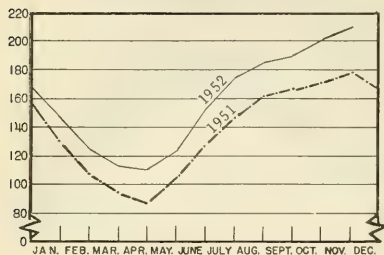
CALIFORNIA - TUNA AND TUNA-LIKE FISH



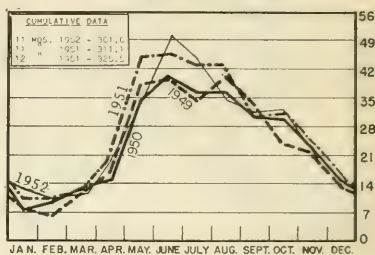
COLD STORAGE HOLDINGS and FREEZINGS of FISHERY PRODUCTS

In Millions of Pounds

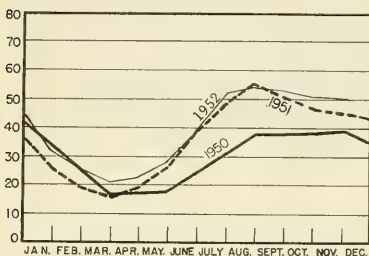
U.S. & ALASKA - HOLDINGS OF FROZEN FISH



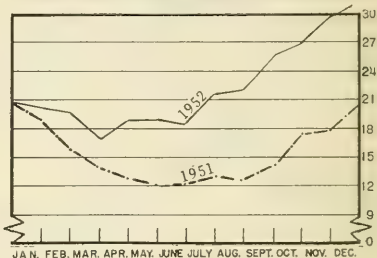
U.S. & ALASKA - FREEZINGS



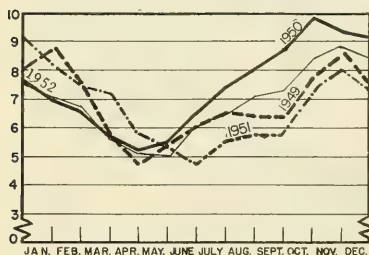
NEW ENGLAND - HOLDINGS OF FROZEN FISH



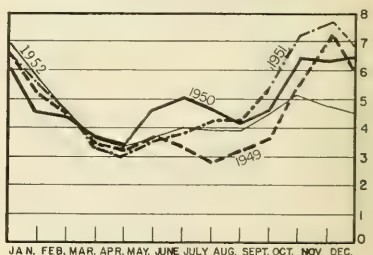
NEW YORK CITY - HOLDINGS OF FROZEN FISH



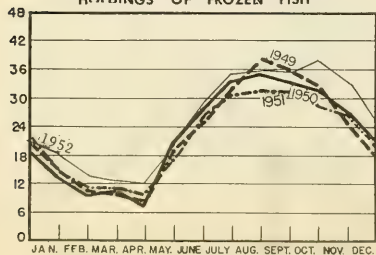
CHICAGO - HOLDINGS OF FROZEN FISH



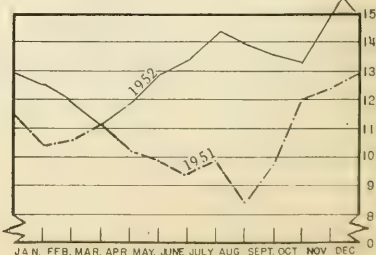
GULF - HOLDINGS OF FROZEN FISH



WASHINGTON, OREGON, AND ALASKA - HOLDINGS OF FROZEN FISH



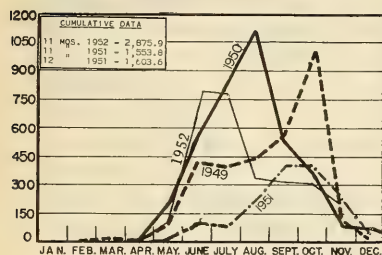
CALIFORNIA - HOLDINGS OF FROZEN FISH



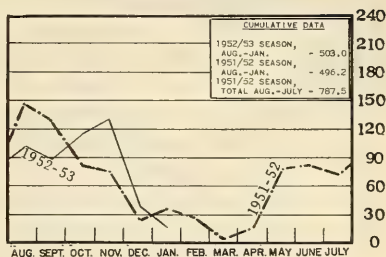
CANNED FISHERY PRODUCTS

In Thousands of Standard Cases

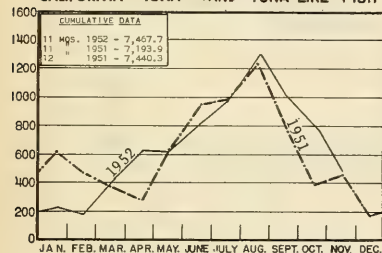
MAINE - SARDINES, ESTIMATED PACK



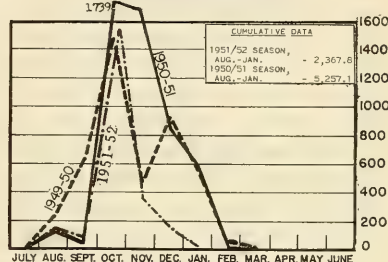
UNITED STATES - SHRIMP



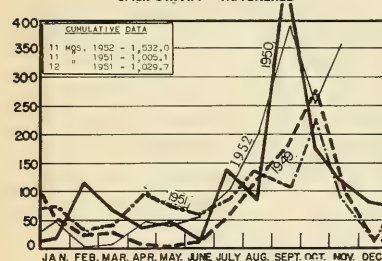
CALIFORNIA - TUNA AND TUNA-LIKE FISH



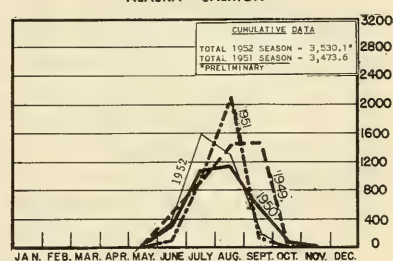
CALIFORNIA - PILCHARDS



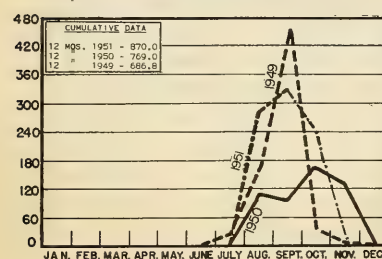
CALIFORNIA - MACKEREL



ALASKA - SALMON



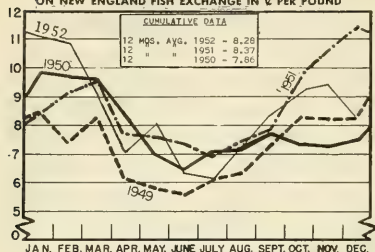
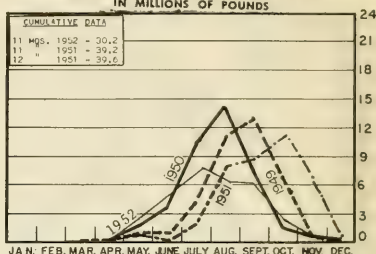
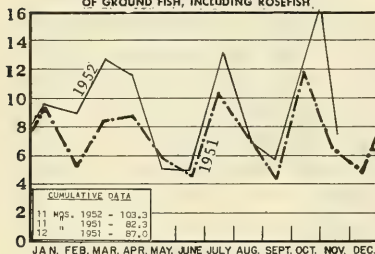
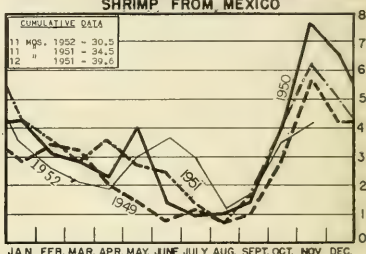
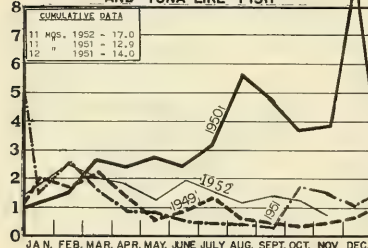
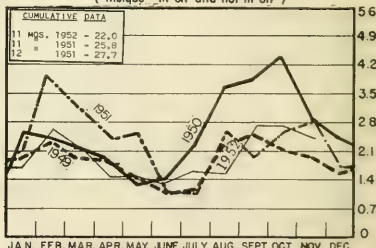
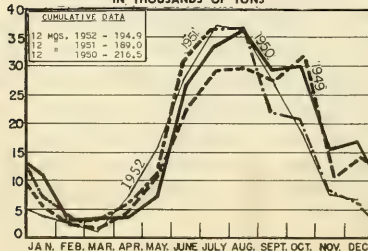
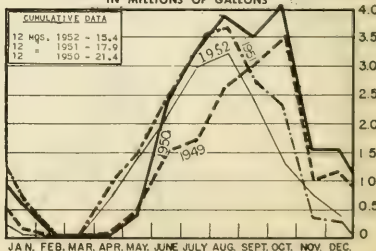
WASHINGTON - PUGET SOUND SALMON

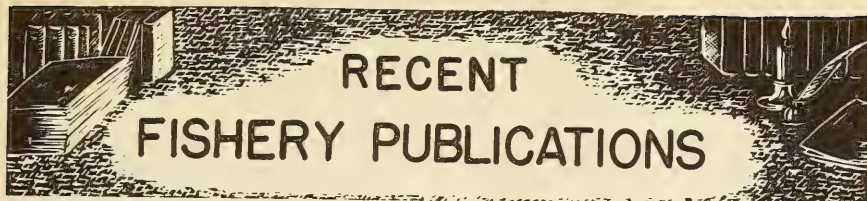


STANDARD CASES

Variety	No. Cans	Can Designation	Net. Wgt.
SARDINES	100	1/4 drawn	3 1/4 oz.
SHRIMP	48		5 oz.
TUNA	48	No. 1/2 tuna	7 oz.
PILCHARDS	48	No. 1 oval	15 oz.
MACKEREL	48	No. 300	15 oz.
SALMON	48	1-pound tall	16 oz.

PRICES, IMPORTS, and BY-PRODUCTS

BOSTON - WEIGHTED AVERAGE PRICE
ON NEW ENGLAND FISH EXCHANGE IN ¢ PER POUNDMAINE - IMPORTS OF FRESH SEA HERRING
IN MILLIONS OF POUNDSU.S. - IMPORTS OF FRESH & FROZEN FILLETS
OF GROUND FISH, INCLUDING ROSEFISHU.S. - IMPORTS OF FRESH AND FROZEN
SHRIMP FROM MEXICOU.S. - IMPORTS OF CANNED TUNA
AND TUNA-LIKE FISHU.S. - IMPORTS OF CANNED SARDINES
(Include in oil and not in oil)U.S. & ALASKA - PRODUCTION OF FISH MEAL
IN THOUSANDS OF TONSU.S. & ALASKA - PRODUCTION OF FISH OIL
IN MILLIONS OF GALLONS



Recent publications of interest to the commercial fishing industry are listed below.

FISH AND WILDLIFE SERVICE PUBLICATIONS

THESE PROCESSED PUBLICATIONS ARE AVAILABLE FREE FROM THE DIVISION OF INFORMATION, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C. TYPES OF PUBLICATIONS ARE DESIGNATED AS FOLLOWS:

- CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES AND ALASKA
 SEP. - SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.
 SSR.-FISH. - SPECIAL SCIENTIFIC REPORTS--FISHERIES (LIMITED DISTRIBUTION).

Number	Title
CFS-671	Canned Fish and Byproducts, 1950 Annual Summary (revised), 20 p.
CFS-813	Massachusetts Landings, September 1952, 7 p.
CFS-814	Frozen Fish Report, November 1952, 8 p.
CFS-815	Lake Fisheries, 1950 Annual Summary, 10 p.
CFS-816	South-Atlantic Fisheries, 1950 Annual Summary, 9 p.
CFS-817	Gulf Fisheries, 1950 Annual Summary, 10 p.
CFS-820	Maine Landings, September 1952, 4 p.
CFS-821	Texas Landings, October 1952, 4 p.
CFS-822	Fish Meal and Oil, October 1952, 2 p.
SSR-Fish. No. 87	Doctoral Dissertations on the Management and Ecology of Fisheries (Additional Listings - 1952), by W. F. Carbine, 46 p., October 1952.
Sep. 327	Progress on Technological Research Projects of the Service's Branch of Commercial Fisheries, 1951-52.

Number	Title
Sep. 328	Freezing Fish at Sea--New England - Part V - Freezing and Thawing Studies and Suggestions for Commercial Equipment.
	Freezing and Cold Storage of Pacific Northwest Fish and Shellfish:
Sep. 329	Part I - Storage Life of Various Rockfish Fillets.
Sep. 330	Part II - King Crab.
Sep. 331	Technical Note No. 22 - A New Liquid Medium for Freezing Round Fish.
Sep. 332	Technological Publications, Fiscal Year 1951-52.
Sep. 333	Odor Control in Fish Processing Plants.
Sep. 334	A Minimum Net-Mesh Size for the New England Haddock Fishery.
Sep. 335	Further Experiments on the Escape of Undersized Haddock through Otter Trawls.

THE FOLLOWING SERVICE PUBLICATION IS FOR SALE AND IS AVAILABLE ONLY FROM THE SUPERINTENDENT OF DOCUMENTS, WASHINGTON 25, D. C.

Effect of Floodwaters on Oysters in Mississippi Sound in 1950, by Philip A. Butler, Research Report 31, 23 p., illus.; printed, 15 cents, 1952. Productive oyster reefs in Mississippi Sound are subject to seasonal floodwaters. In 1945, lowered salinity caused mass mortality on the reefs. The mortality at that time was attributed to fresh water discharged from the Bonnet Carré

spillway on the Mississippi River. This report discusses the biological and hydrographic data collected during the flood period in 1950. Comparison of 1950 with previous years indicates that salinity levels in Mississippi Sound result from a combination of factors, no one of which can reasonably be cited as the cause of the oyster mortalities.

MISCELLANEOUS PUBLICATIONS

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE AGENCIES ISSUING THEM. CORRESPONDENCE REGARDING PUBLICATIONS THAT FOLLOW SHOULD BE ADDRESSED TO THE RESPECTIVE AGENCIES OR PUBLISHERS MENTIONED. DATA ON PRICES, IF READILY AVAILABLE, ARE SHOWN.

Annual Earnings of Boston Fishermen in 1951, by Solomon Shapiro, 15 p., processed. Bureau of Labor Statistics, U. S. Department of Labor, Washington 25, D. C., July 1952. This report gives statistical data for 1951 on the average annual earnings of Boston fishermen by occupation, increase in employment opportunity, and variations in earnings among ships. A chart showing the percentage increase in annual earnings of Boston fishermen from 1948 to 1951 is also included. A comparison of the average annual earnings of Boston fishermen by number of days worked and average number of days worked by occupation is made for 1951 and 1948. Other tables show the 1951 distribution of fishermen in the Boston Fish Pier fleet by annual earnings and occupation; and distribution of fishermen, deckhands, cooks, captains, mates, chief engineers, and second engineers by annual earnings and number of days worked.

(California) The Commercial Fish Catch of California For the Year 1950, with a Description of Methods Used in Collecting and Compiling the Statistics, Fish Bulletin No. 86, 120 p., illus., printed. Bureau of Marine Fisheries, Department of Fish and Game, San Francisco, Calif., 1952. The report contains complete data available on the commercial catch of fish, mollusks, and crustaceans landed and shipped into California during 1950; information on the number of licensed fishermen in the State; the number of registered fishing boats; data on the marine catch made by sportsmen; and related information. In addition, it discusses the changes that have been made in the statistical forms and in the procedure of collecting and processing the statistics of California's fish catch. Since the State of California maintains the largest and most complete fishery statistical unit of any of the States, and has used the present statistical system for over 30 years, this section of the report will be of special interest to those concerned with the collection and tabulation of fishery data. A list of common and scientific names of California fish, crustaceans, and mollusks is included.

—E. A. Power

"Commercial Shrimps of the Pacific," article, Trade News, September 1952, vol. 5, no. 3, pp. 5-6, 11, illus., processed. Department of Fisheries, Ottawa, Canada. Five commercial species of shrimp which are found in the waters off the British Columbia coast are described: "side-stripe" or "giant-red" (*Pandalopsis dispar*); "pink" (*Pandalus borealis*); "prawn" or "spot" (*Pandalus platyceros*); "hump-back" or "king" (*Pandalus hypsinotus*); and "coon-stripe" shrimp (*Pandalus danae*). Pictures are included showing features used in identification.

Handbook of Emergency Defense Activities, October 1952-March 1953, 125 p., printed, 30 cents. General Services Administration, Washington, D. C. (For sale by Superintendent of Documents, Washington 25, D. C.) This is a guide to Federal agencies whose activities are primarily devoted

to mobilization or to other related phases of the defense program. It includes brief organizational outlines and the names and addresses of officials of emergency defense agencies, the Department of Defense, and the United States Coast Guard. The Defense Fisheries Administration is also listed. It also includes a separate list of officials from whom information may be obtained concerning other Federal agencies.

Harp Seals of the Northwest Atlantic, by H. D. Fisher, General Series No. 20, 4 p., illus., processed. Fisheries Research Board of Canada, Atlantic Biological Station, St. Andrews, N. B., September 1952. A brief resume of the life history and movements of the northwest Atlantic stocks of harp seals (*Phoca groenlandica*) during the course of a year.

An Investigation of Fresh Clam (MYA ARENARIA) Meats with Respect to Criteria of Adulteration, by Donald M. Harriman, Research Bulletin No. 3, 21 p., illus., processed. Department of Sea and Shore Fisheries, Augusta, Maine, April 1950. Describes an investigation of clam meat solids and free liquids. Free liquid is itself a diluent, and while it has not been shown to be an index of absorbed water, it should be limited as representing one type of adulteration. That free liquids can be kept below 10 percent in the commercial pack has been demonstrated. It is, therefore, recommended by the author that free liquids in excess of 10 percent be accepted as a criterion of adulteration. Other recommendations by the author were: (1) total solids should not be considered as a criterion of adulteration; (2) if a minimum solids content is to be stipulated, 11 percent is considered the least objectionable. This report discusses the history of Maine clam standards; clam quality variables as determined by meat assays; total solids; free liquid; effect of various washing methods on the free-liquid content of clam packs; and the problem of standards.

I. Lobster Plugs and Their Effect on the Meat of the Lobster's Claw, by Frederick T. Baird, Jr., Research Bulletin No. 2, 12 p., illus., printed; and II. A Device for Determining Lobster Weights, by Clyde C. Taylor, Fisheries Circular No. 6, pp. 13-16, illus., printed. Department of Sea and Shore Fisheries, Vickers-Hill Bldg., Augusta, Maine, March 1950. The first part of this bulletin covers experiments made with various types of lobster plugs to determine their effect on the meat of the lobster's claws. It was found that no plug was effective in reducing or preventing bacterial action or discoloration. Sterilization of plugs and claws followed by sealing prevented the formation of discoloration, indicating discoloration is caused by a factor not associated with the plug itself. The second part of this bulletin describes the construction and accuracy of a measuring device used for determining lobster weights. Determinations of the weight and length of lobsters have shown that, within the legal size range, the average weight in pounds can be mathematically expressed as a

function of the length of the lobster, the weight varying approximately as the cube of the total length or of the carapace (body shell) length.

Marine Game Fishes of the World, by FrancescalaMonte, 190 pages, illus., printed, \$3.50. Doubleday and Company, Garden City, New York, 1952. A book for anglers, but also a handy reference for those interested in any other aspect of fisheries. It is essentially a guide for the identification of marine game fishes throughout the world. Sharks and rays, tuna, bonito, and mackerels, grunts, snappers, croakers, flatfishes, and many others are described in such a way that the average person will have no difficulty in identifying them. The groups are catalogued effectively with information on the distribution, color, distinguishing characters, size, food, habits, and means of angling for each species. The book is generously illustrated with 138 plates, arranged for easy reference in the text. There are 80 illustrations in full color and 58 in black and white. The artist is Janet Roemhild. A small part of the book is devoted to a geographical section where condensed information may be found on types of angling and facilities for sport fishing in various localities throughout the world. The book is well indexed—a real boon to those readers who will make constant use of the index in a reference book of this type. International Game Fish Association charts list record sport-fishing catches. The author is Secretary of the Association and also the Associate Curator of Fishes at the American Museum of Natural History. This book aptly demonstrates her qualification as an authority in game-fish identification.

—R. T. Whiteleather

Maryland's Natural Resources at a Glance, 2 p., illus., printed. Board of Natural Resources, State Office Building, Annapolis, Md., August 1951. This leaflet gives a few facts and figures to illustrate the variety and value of the natural resources of Maryland. Charts showing the yield of Maryland's commercial fisheries for 1949, and the number of Maryland hunters and freshwater fishermen for 1949-50 are included. The State agencies which have been established to protect, preserve, and develop Maryland's natural resources are listed.

(MSA) Monthly Report of the Mutual Security Agency to the Public Advisory Board (Data as of August 31, 1952), 74 p., illus., processed. Division of Statistics and Reports, Mutual Security Agency, Washington 25, D. C. Included are charts and tables summarizing important activities under the economic assistance and defense support programs of the Mutual Security Agency and its predecessor, the Economic Cooperation Administration, through August 31, 1952. Charts and appendix tables on the European program cover MSA/ECA operations beginning with April 3, 1948. Charts and appendix tables on the Far East program cover MSA/ECA operations under the China Area Aid Act of 1950. A section of the report deals with U. S. foreign trade.

North Carolina's Natural Resources, North Carolina Resource Bulletin Series No. 4, 54 p., illus., printed. North Carolina Department of Conservation and Development, Raleigh, N. C., 1952. This bulletin is intended to help the public in gen-

eral, and especially the school children who are studying the resources of the State of North Carolina, to understand how the Department of Conservation and Development is organized and the means it uses in conserving and developing the resources under its supervision. The commercial fisheries of North Carolina and the problems of the industry are discussed. A chart on the development of State agencies administering natural resources in North Carolina, an organization chart of the Department of Conservation and Development, and descriptions of the work of the various divisions of the Department are included.

Prospects for the 1952-53 Herring Fishing Season, by J. C. Stevenson, Circular No. 25, October 1952, 7 p., with map, processed. Pacific Biological Station, Fisheries Research Board of Canada, Nanaimo, B. C. This is the eighth in an annual series of circulars dealing with the prospects for the British Columbia herring fishery. Various studies of the adult herring populations form the basis of these annual predictions of the success of fishing. The studies provide information on (1) the relative abundance of the different age groups in the fishing and spawning runs, (2) the size of the catch and the fishing effort expended, and (3) the relative size of the part of the population which escaped the fishery and spawned.

Ranch Fish Ponds in Montana (Their Construction and Management), by C. J. D. Brown and Nels A. Thoreson, Bulletin 480, 30 p., illus., printed. Montana State College, Agricultural Experiment Station, Bozeman, Montana, December 1951. This bulletin brings together from all sources the information which is applicable to Montana on the development and management of a ranch fish pond. Instructions are given for choosing a suitable site, preparation of the dam and pond sites, constructing the dam, determining the kind of fish to be planted, pond fertilization, and related subjects. Laws pertaining to the regulation of fish ponds in Montana are quoted.

Regulation and Investigation of the Pacific Halibut Fishery in 1950, Report of the International Fisheries Commission No. 16, 16 p., illus., printed. International Fisheries Commission, Seattle, Wash., 1951. A brief review of the Commission's activities in 1950 with reference to the Pacific Coast halibut fishery. Presented in the booklet are data on the 1950 fishery and the regulations for that year, statistics of landings, abundance of halibut in certain areas, changes in composition of stocks, and the marking program.

A Revision of the Family EMBIOTOCIDAE (The Surperches), by Fred Harald Tarp, Fish Bulletin No. 88, 103 p., illus., printed. Bureau of Marine Fisheries, Department of Fish and Game, San Francisco, Calif., October 1952. Includes an outline of the general history of the surperches (family Embiotocidae) and their viviparity. Because of their rather close relationships, the Embiotocidae have been a problem for the angler, the ecologists, the parasitologist, and others, to identify and even, occasionally, have proved to be difficult for the professional ichthyologist to determine. An attempt has been made in this revision to remedy this situation by including full descriptions based on populations rather

than on individual specimens, and by including a key which will prove adequate for juvenile specimens, as well as for adults.

Second Report to Congress on the Mutual Security Program... for a strong and free world, 51 p., illus., printed, 30 cents. Mutual Security Agency, Washington, D. C., June 30, 1952. (For sale by Superintendent of Documents, Washington 25, D. C.) This report reviews the steps that have been taken with other nations, during the first six months of 1952, to work for peace and security.

(Singapore) Fisheries Survey Report (No. 1--An Introduction to the Fisheries Survey of the Colony of Singapore with a Consideration of the Methodology Employed), by G. L. Kesteven and T. W. Burdon, Fisheries Bulletin No. 2, 126 p., illus., printed, British Malaysian \$2.00 (approximately US\$.70). Government Publications Bureau, Singapore, 1952. This is the first report of a detailed and intensive study of the fishing industry of the Colony of Singapore commenced in 1950. Purpose of this report is to describe the steps which have been taken thus far to secure reliable documentation of the industry, and in particular to give an account of the statistical techniques employed to achieve a measure of reliability that will permit confident planning. Many of the elements of the industry are best regarded from the statistical viewpoint and much of the survey work has inevitably been and will continue to be concerned with the collection of statistical data. The series of such data are listed and described in this report and an account is given of the methods which are being employed in this survey. Also discussed are the general nature of the results which are emerging from this work and the directions in which these results point in respect to future work.

Trade with Norway (A Businessman's Guide and Directory), 130 p., illus., printed. Economic Cooperation Administration Special Mission to Norway, Oslo, April 1951. The purpose of this booklet is to tell the American businessman a little more about Norway and the way in which Norwegian-American trade is carried on. Among the subjects included are Norway's fishing industry, canned and frozen fishery products, and statistics on canned fish exports. The directory of Norwegian exporters includes the names and addresses of exporters of canned fishery products, frozen fishery products, dried and salted fish, fishery byproducts, fishing equipment, and pearl essence.

"The Useful Algae," by Francis Joseph Weiss, article, Scientific American, December 1952, vol. 187, no. 6, pp. 15-17, illus., printed. Scientific American, Inc., New York 36, N. Y. Describes

some of the algae most commonly known as seaweed. "Algae are responsible for much more of our mineral and organic resources than is generally realized," states the author. "The constant erosion and leaching of minerals from the land into the oceans during hundreds of millions of years has vastly enriched the seas' mineral content. Since algae have an extraordinary capacity to accumulate minerals, they have become steadily richer in sodium, potassium, calcium, magnesium, chlorine, sulfur, iron, copper, manganese, zinc, arsenic, cobalt, nickel, lead, tin, molybdenum, antimony, titanium, boron, bromine, and iodine." Algae of marine origin, therefore, make excellent fertilizers for depleted soils," continues the author. "Since time immemorial the larger seaweeds have served human beings as a food supplement." Algin (a processed product) and its derivatives have a great number of present and potential uses in industrial and food chemistry, the author points out. "Algin can be pressed into boards or other plastic products. Its mineral salts can be spun into noninflammable fibers. Algin makes many food products more appealing and palatable. It is estimated that no less than 75 percent of all the ice cream consumed in the United States is now emulsified with algin. In addition, it is used as a stabilizer in sherbets, chocolate milk, and cheese, and as a thickener for soups and salad dressings. And in the industrial field, algin is widely used in pharmaceutical emulsions, cosmetic preparations, sizing material, paper coating, paints and varnishes, latex creaming, leather finishing--in short wherever need exists for a gel-forming hydrophilic substance."

TRADE LISTS

The Commercial Intelligence Branch, Office of International Trade, U. S. Department of Commerce, has published the following mimeographed trade lists. Copies of these lists may be obtained by firms in the United States from that Office or from Department of Commerce field offices at \$1.00 per list.

Boat and Ship Builders - Repairers and Chandlers - Philippines, 6 p. (November 1952). Lists the names and addresses of boat builders and repairers, and ship chandlers in the Philippine Islands. The size and type of vessel handled and the types of products and services offered by each firm are shown.

Boat and Ship Builders, Repairers and Chandlers - Portugal, 8 p. (November 1952). Lists the names and addresses of boat builders and repairers, and ship chandlers in Portugal. Shown are the sizes and the types of vessel handled and the types of products and services offered by the firms listed.



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MARKET NEWS SERVICE SECTION

Branch of Commercial Fisheries, U. S. Fish and Wildlife Service
Department of the Interior

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